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ENVIRONMENTAL SCIENTIST-METEOROLOGIST

Rio Blanco Oil Shale Company

Tract C-a

Colorado Department of Health

Air Pollution Emission Permit Applications

LURGI DEMONSTRATION PROJECT

January 1981

Gulf Oil Corporation/Standard Oil Company (Indiana)
'A General Partnership'
2851 South Parker Road, Aurora, Colorado 80014

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INTRODUCTION

Enclosed are ten (10) permit applications for the emission sources associated with RBOSC's proposed Lurgi Demonstration Project. Air pollution emission notices (APEN) and supplementary information are included where appropriate.

Additional information on each emission source is included in the Lurgi Demonstration Project Report and the PSD permit application. Reference to the appropriate sections of these documents are included on the CDOH permit applications and supplementary forms.

The overall plot plan for the Lurgi Demonstration Project is included in a map pocket at the back of the PSD Application. A reduced copy of this plot plan is shown in Figure 1.

The location of the major stationary emission sources are included on the Atmospheric Emission Plot Plan (Drawing No. SKE-9423-900-0) submitted as part of the application packet. Additional copies of this drawing can be provided upon request. Additional data on emission from support facilities identified on this drawing are provided in the Appendix to the CDOH permit application document.

If discrepancies occur in the description of or specifications for emission sources among the various information provided, the CDOH air emission forms represent the most current data for the particular source in question.

Detailed information on capitol and operating costs and annual energy consumption control equipment have not been developed at this time. "Ballpark" estimates can be provided if necessary.

A permit application has not been filed for the Emergency Flare because this source will only operate during emergency situations (estimated to be 72 hour maximum/yr). Data on the emergency flare are included in the appendix (source E-4002) and on page 7-5-14 of the Lurgi Demonstration Project Report.

An application has not been submitted for the cooling towers (E-5004) because no air pollutants are anticipated from this source.

A permit application has been submitted for the emergency electrical generator even though it is anticipated that this source will operate less than 250 hours per year.

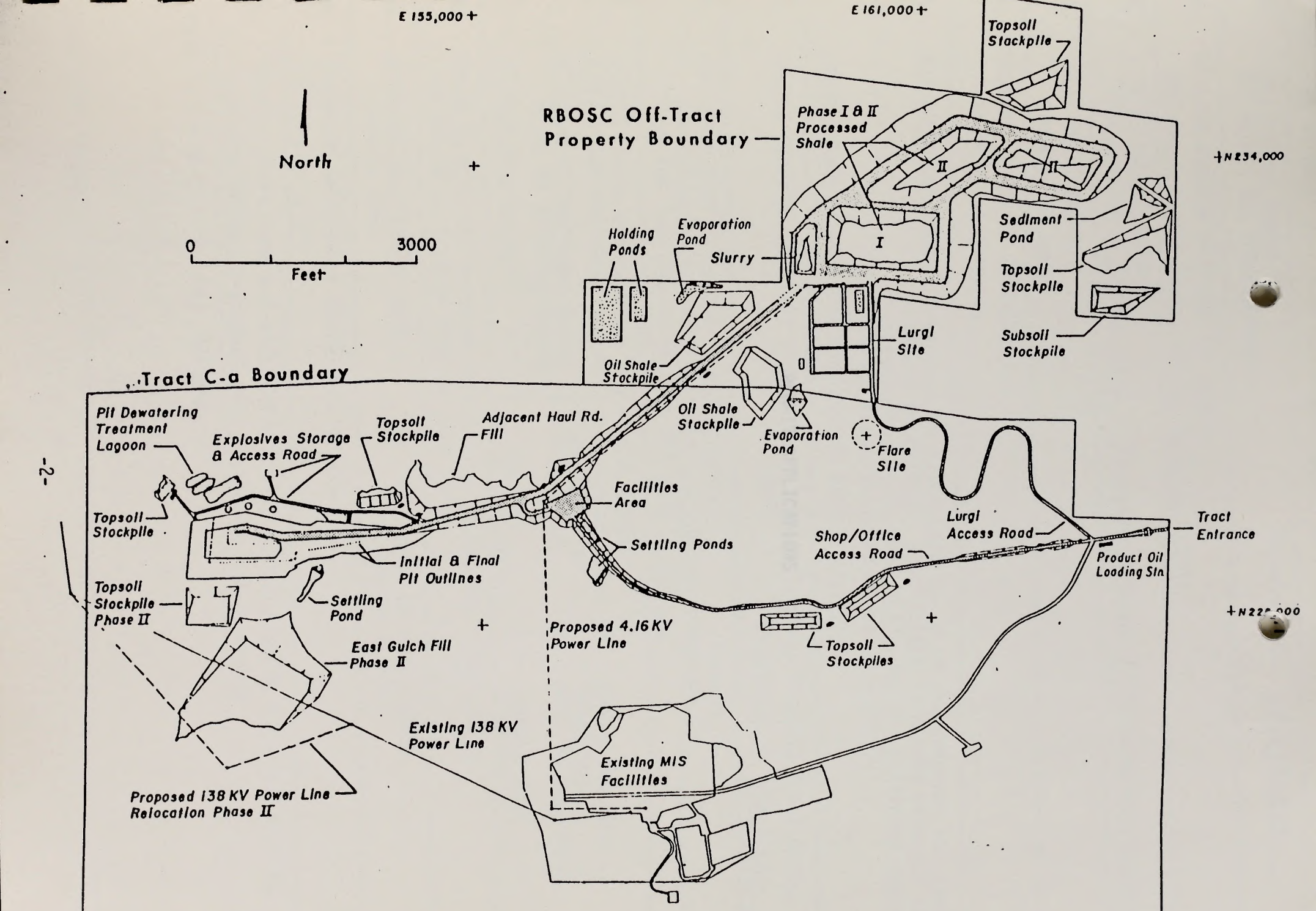

Figure 1
Lurgi Demonstration Project Plot Plan

PERMIT APPLICATIONS

This application shall be filled out completely - see instructions on reverse side.

1. PERMIT TO BE ISSUED TO
RIO BLANCO OIL SHALE COMPANY
Telephone No. (303) 695-2400

2. MAILING ADDRESS (include zip code):
2851 South Parker Road, Aurora, Colorado 80014

3. TYPE OF ORGANIZATION:
/ / Corporation /XX/ Partnership / / Individual Owner / / Governmental Agency

4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):
GENERAL FUGITIVE DUST FROM CONSTRUCTION RELATED ACTIVITIES

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment See PSD Sec. 9 Process Equipment
Days Per Year Source Will Be Operated 261

9. STATUS (check and complete applicable items):

	Estimated Date Construction Will Begin	Estimated Date Construction Will Be Completed
/XX/ New Air Pollutant Source		
/ / Control Equipment Being Added to Existing Source		
/ / Activity Change	May 1981	January 1983

10. Check is enclosed to cover APPLICATION FILING FEE /XX/ $40.00
(see No. 10 on reverse side of this form)

11. ANTICIPATED START-UP DATE
January 1983

12. DATE OF APPLICATION
January 9, 1981

13. SIGNATURE OF LEGALLY AUTHORIZED PERSON
X J. Blaine Miller

14. Type or print name and official title of person signing this application.
J. Blaine Miller, President, Rio Blanco Oil Shale Company

Date Received	15. REMARKS:

200C (REV. 3/80)

AIR POLLUTION CONTROL DIVISION - COLORADO DEPARTMENT OF HEALTH
4210 E. 11th Ave., Denver, Colorado 80220 - Ph: 320-4180

SUPPLEMENTAL INFORMATION
LAND DEVELOPMENT
General Fugitive Dust from Construction Related Activities

1. Complete this form in duplicate.
2. Use one form for each project.
3. For assistance and information, please contact the Health Department, Air Pollution Control Division, Stationary Sources Section, 4210 E. 11th Ave., Denver, CO 80220.

1. PERMIT TO BE ISSUED TO: Rio Blanco Oil Shale Company Telephone: 695-2486
2. MAILING ADDRESS (Include ZIP Code): 2851 S. Parker Road, Aurora, Colorado 80014
3. CONTACT PERSON: Jim Ericson
4. PROJECT ADDRESS: Tract C-a COUNTY: Rio Blanco
(Attach map locating project by nearby street intersections.)
5. Estimated Date Earthmoving Will Commence: May 1, 1981
6. Number of Acres Subject to Earthmoving: Daily: Total: 757
7. Acres of Roads and/or Parking Lots to be Paved Within 6 Months: None
8. Method of Dust Suppression: XX Watering XX Compaction XX Revegetation
Proctor Test: Yes XX No
Other (describe below)
9. Work Schedule: Hours/Day 20 Days/Month Days/Year 261
0. Estimated Length of Time to Complete Overlotting:
1. Estimated Length of Time to Complete Entire Project from Start of Overlotting to Completion of Construction: 43 months May 1981 to December 1984
2. Number of Buildings: Residential: Commercial: Industrial:
3. Average Square Footage (Footprint) Covered by Foundation, Garage, etc., per Building: N/A
4. Acreage of Land Not to be Disturbed in Earthmoving, but Still Part of the Overall Project: 4,789
5. Describe Control Measures to be Utilized to Minimize Generation of Fugitive Dust. 90% compaction on access road. Watering during the construction of roads and dikes. Rapid revegetation of overburden dikes. See Best Available Control Technology section of the PSD Application to EPA Region VIII for a complete description. See Appendix B of same for detailed fugitive dust calculations.

C-95

This application shall be filled out completely - see instructions on reverse side.

1. PERMIT TO BE ISSUED TO: Telephone No. (303) 695-2400
RIO BLANCO OIL SHALE COMPANY

2. MAILING ADDRESS (include zip code):
2851 South Parker Road, Aurora, Colorado 80014

3. TYPE OF ORGANIZATION:
/ / Corporation /XX/ Partnership / / Individual Owner / / Governmental Agency

4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):

CEMENT BATCH PLANT

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment See attached for Process Equipment
Days Per Year Source Will Be Operated 261

9. STATUS (check and complete applicable items):

	Estimated Date Construction Will Begin	Estimated Date Construction Will Be Completed
/XX/ New Air Pollutant Source		
/ / Control Equipment Being Added to Existing Source		
/ / Activity Change	May 1981	January 1983

10. Check is enclosed to cover APPLICATION FILING FEE /XX/ $40.00
(see No. 10 on reverse side of this form)

11. ANTICIPATED START-UP DATE
January 1983

12. DATE OF APPLICATION
January 9, 1981

13. SIGNATURE OF LEGALLY AUTHORIZED PERSON
X J. Blaine Miller

14. Type or print name and official title of person signing this application.
J. Blaine Miller, President, Rio Blanco Oil Shale Company

Date Received

15. REMARKS:

(Stationary Source)

MAIL ADDRESS 2851 South Parker Rd., Aurora, CO PLANT LOCATION Piceance Creek Route, Rifle, CO COUNTY Rio Blanco

PERSON TO CONTACT REGARDING THIS INFORMATION James W. Ericson TITLE Environmental Coordinator PHONE 695-2400

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION Oil Shale Production Will you accept collect calls? Yes Best hours to call: 7:30 - 4:30

A. GENERAL INFORMATION		Normal Operation of Plant*			Seasonal Throughput (% of Annual)				*Specify any significantly different schedule of a unit or process which emits air pollutants
No. of Employees	Land Area	Hours/Day	Days/Week	Weeks/Year	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	
970 (Max.)		24	7	52	25	25	25	25	

B. STACK OR VENT INFORMATION FOR (identify which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture	
ft	ft	°F	ACFM	ft/min	%	CEMENT BATCH PLANT

C. FUEL INFORMATION Description of Combustion Unit	Design Rate (10^6BTU/Hr)	Kind of Fuel Burned	Annual Consumption (Tons, 10^3Gal, or 10^6SCF)	Heating Value (10^6BTU/Annual Unit)	Per Cent by Weight		Seasonal Use (% of Annual Use)				Space (% Ar
					Sulfur(X.XXX)	Ash(XX.X%)	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	
N/A											

D. PROCESS INFORMATION Description of Processing Unit	Raw Materials, Solvents, Cleaning Agents, Waste, etc. Involved in Process	Annual Consumption (Specify Units)	Design Rate (Specify Units/Hour)	Finished Products		(APCD Use) SCC
				Product Name or Description	Annual Output	
storage bins, silos, weight houses, mixer	sand, aggregate, cement, water		6.67 yd³/hr	concrete		

E. POLLUTION CONTROL EQUIPMENT Pollutant	Type of Control Equipment: Primary	Secondary	Overall Collection Efficiency	Cost of Control Equipment: Initial Installation	Annual Total Operating Cost	Annual Energy Used (Specify Units & Type)	(To be completed by Air Pollution Control Division) Emissions Estimate Tons/Year	Uncontrolled Emissions Tons/Year	Allowable Emissions Tons/Year	Estimation Method
Particulate	Baghouse		99%		Equipment IS LEASED					
SO_x										
NO_x										
HC										
CO										
Pb										
Other:										

REMARKS: See Best Available Control Technology section of the PSD Application submitted to EPA Region VIII for a more complete description of the controls for each subprocess. See Appendix B of same for detailed fugitive dust calculations.

Signature of Person Legally Authorized to Supply Data: J. Blaine Miller

Typed Name & Title: J. Blaine Miller, President, Rio Blanco Oil Shale Company

COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
Denver, Colorado 80220
(303) 320-4180

(For APCD Use) County ID	AQCR	Plant ID	Date of Record (Julian)	City ID	UTM Zone	Owner Code	Process Classif. SIC	Process Classif. IPP	UTM Coordinates: Horizontal	Vertical	ECAR	Colorado Air Quality Control Regulations			Conf	Source Code

This application shall be filled out completely - see instructions on reverse side.

1. PERMIT TO BE ISSUED TO: RIO BLANCO OIL SHALE COMPANY — Telephone No. (303) 695-2400

2. MAILING ADDRESS (include zip code):
2851 South Parker Road, Aurora, Colorado 80014

3. TYPE OF ORGANIZATION:
/ / Corporation /XX/ Partnership / / Individual Owner / / Governmental Agency

4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):

GENERAL FUGITIVE DUST FROM OPERATIONS RELATED ACTIVITIES

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment See PSD, Sec. 9 Process Equipment
Days Per Year Source Will Be Operated 365

9. STATUS (check and complete applicable items):

	Estimated Date Operations Will Begin	Estimated Date Operations Will Be Completed
/XX/ New Air Pollutant Source		
/ / Control Equipment Being Added to Existing Source		
/ / Activity Change	May 1981	January 1986

10. Check is enclosed to cover APPLICATION FILING FEE /XX/ $40.00
(see No. 10 on reverse side of this form)

11. ANTICIPATED START-UP DATE
January 1983

12. DATE OF APPLICATION
January 9, 1981

13. SIGNATURE OF LEGALLY AUTHORIZED PERSON
X J Blaine Miller

14. Type or print name and official title of person signing this application.
J. Blaine Miller, President, Rio Blanco Oil Shale Company

Date Received

15. REMARKS:

APCD 200C (REV. 3/80)

AIR POLLUTION CONTROL DIVISION - COLORADO DEPARTMENT OF HEALTH
4210 E. 11th Ave., Denver, Colorado 80220 - Ph. 320-4180

SUPPLEMENTAL INFORMATION
LAND DEVELOPMENT

General Fugitive Dust from Operations Related Activities

1. Complete this form in duplicate.
2. Use one form for each project.
3. For assistance and information, please contact the Health Department, Air Pollution Control Division, Stationary Sources Section, 4210 E. 11th Ave., Denver, CO 80220.

1. PERMIT TO BE ISSUED TO: Rio Blanco Oil Shale Company Telephone: 695-2486

2. MAILING ADDRESS (Include ZIP Code): 2851 S. Parker Road, Aurora, Colorado 80014

3. CONTACT PERSON: Jim Ericson

4. PROJECT ADDRESS: Tract C-a COUNTY: Rio Blanco
(Attach map locating project by nearby street intersections.)

5. Estimated Date Earthmoving Will Commence: May 1, 1981

6. Number of Acres Subject to Earthmoving: Daily: _____ Total: 757

7. Acres of Roads and/or Parking Lots to be Paved Within 6 Months: None

8. Method of Dust Suppression: XX Watering ___ Compaction XX Revegetation

Proctor Test: Yes _____ No XX

Other (describe below) Chemical dust suppressant, mulches

9. Work Schedule: Hours/Day 20 Days/Month _____ Days/Year 261

10. Estimated Length of Time to Complete Overlotting: _____

11. Estimated Length of Time to Complete Entire Project from Start of Overlotting to Completion of Operations: 56 months, May 1981 to January 1986

12. Number of Buildings: Residential: ____ Commercial: ____ Industrial: ____

13. Average Square Footage (Footprint) Covered by Foundation, Garage, etc., per Building: N/A

14. Acreage of Land Not to be Disturbed in Earthmoving, but Still Part of the Overall Project: 4,789 acres

15. Describe Control Measures to be Utilized to Minimize Generation of Fugitive Dust. Chemical dust suppressant on access road. Watering, chemical dust suppressant, and speed control on haul roads. Water injection on blasthole drilling. Rapid revegetation of topsoil and overburden stockpiles. See Best Available Control Technology section of

C-95

SUPPLEMENTAL INFORMATION
LAND DEVELOPMENT
(Continued)

15. (Continued) the PSD Application to EPA Region VIII for a complete description. See Appendix B of same for detailed fugitive dust calculations.

APPLICATION FOR EMISSION PERMIT

This application shall be filled out completely - see instructions on reverse side.

1. PERMIT TO BE ISSUED TO: RIO BLANCO OIL SHALE COMPANY
Telephone No. (303) 695-2400

2. MAILING ADDRESS (include zip code):
2851 South Parker Road, Aurora, Colorado 80014

3. TYPE OF ORGANIZATION:
/ / Corporation /XX/ Partnership / / Individual Owner / / Governmental Agency

4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):
Product Gas Incinerator and Scrubber

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment TBD* Process Equipment TBD*
Days Per Year Source Will Be Operated 365

9. STATUS (check and complete applicable items):

	Estimated Date Construction Will Begin	Estimated Date Construction Will Be Completed
/XX/ New Air Pollutant Source		
/ / Control Equipment Being Added to Existing Source		
/ / Activity Change	May 1981	January 1983

10. Check is enclosed to cover APPLICATION FILING FEE /XX/ $40.00
(see No. 10 on reverse side of this form)

11. ANTICIPATED START-UP DATE
January 1983

12. DATE OF APPLICATION
January 9, 1981

13. SIGNATURE OF LEGALLY AUTHORIZED PERSON
X J Blaine Miller

14. Type or print name and official title of person signing this application.
J. Blaine Miller, President, Rio Blanco Oil Shale Company

Date Received

15. REMARKS:

* To be determined

Colorado Department of Health — Source — FIRM NAME RIO BLANCO OIL SHALE COMPANY — PERMIT NO. — Page No.

MAIL ADDRESS 2851 South Parker Rd., Aurora, CO — PLANT LOCATION Piceance Creek Route, Rifle, CO — COUNTY Rio Blanco

PERSON TO CONTACT REGARDING THIS INFORMATION James W. Ericson — TITLE Environmental Coordinator — PHONE 695-2400

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION Oil Shale Production (incinerator/scrubber) — Will you accept collect calls? X Yes — Best hours to call:

A. GENERAL INFORMATION		Normal Operation of Plant*			Seasonal Throughput (% of Annual)				*Specify any significantly different schedule of e unit or process which emits air pollutants
No. of Employees	Land Area	Hours/Day	Days/Week	Weeks/Year	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	
970 (est.)		24	7	52	25	25	25	25	

B. STACK OR VENT INFORMATION FOR ..... (Identify which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture
310 ft	6.5 ft	220 °F	88,000 ACFM	2,650 ft/min	30 %

C. FUEL INFORMATION Description of Combustion Unit	Design Rate (10^6BTU/Hr)	Kind of Fuel Burned	Annual Consumption (Tons, 10^3Gal, or 10^6SCF)	Heating Value (10^6BTU/Annual Unit)	Per Cent by Weight Sulfur(X.XX%)	Ash(XX.X%)	Seasonal Use (% of Annual Use) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Space (% Ar
Incinerator/scrubber	70	product gas	6.1×10^{11} BTU		0.4		25	25	25	25	

D. PROCESS INFORMATION Description of Processing Unit	Raw Materials, Solvents, Cleaning Agents, Waste, etc. Involved in Process	Annual Consumption (Specify Units)	Design Rate (Specify Units/Hour)	Finished Products Product Name or Description	Annual Output	(APCD Use) SCC
Incinerator/Scrubber	NaOH consumed	290 tons	66 lbs/hr	Scrubber effluent		
	Na_2SO_4 produced	513 tons	117 lbs/hr	Liquid		

E. POLLUTION CONTROL EQUIPMENT Pollutant	Type of Control Equipment Primary	Secondary	Overall Collection Efficiency	Cost of Control Equipment Initial Installation	Annual Total Operating Cost	Annual Energy Used (Specify Units & Type)	(To be completed by Air Pollution Control Division) Emissions Estimate Tons/Year	Uncontrolled Emissions Tons/Year	Allowable Emissions Tons/Year	Estimation Method
Particulate	--	--								
SO_x	Scrubber	--	80%	To be determined						
NO_x	--	--	--							
HC	--	--	--							
CO	--	--	--							
Pb	--	--	--							
Other:										

REMARKS: Additional data on the incinerator/scrubber are available in Section 4, Chapter 3 and Section 7, Chapter 5 of the Lurgi Demonstration Project report

Signature of Person Legally Authorized to Supply Data X J. Blaine Miller

Typed Name & Title J. Blaine Miller, President, Rio Blanco Oil Shale Company

COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
Denver, Colorado 80220
(303) 320-4180

(For APCD Use) County ID	AQCR	Plant ID	Date of Record (Julian)	City ID	UTM Zone	Owner Code	Process Classif. SIC	IPP	UTM Coordinates Horizontal	Vertical	ECAP	Colorado Air Quality Control Regulations			Conf	Source Code

Fill in the blanks and attach the rest as specified:

1. General Description - Type: FMC Model SINGLE ALKALI VARIABLE THROAT VENTURI SCRUBBER

2. Process Description:

Attach a written description of each process to be carried out in each of the basic equipment. Particular attention must be given to explaining all stages in the process where the discharge of any air contaminants may take place. Draw a flow diagram and refer to it in the description.

3. Design Information:

A. Type of scrubber (check applicable):

_✓_ Plate *	_ _ Mechanically aided	_ _ Mobile bed
_ _ Fibrous packing	_ _ Massive packing	_ _ Impingement and entrainment
_✓_ Gas-atomized spray, VENTURI *	_ _ Pre-formed spray	
_ _ Baffle	_ _ Centrifugal	

* Combination

B. Pollutant(s) to be removed from inlet gas stream SO_2

C. Complete ALL applicable portions of the following table:

Inlet gas flow rate 100,000 acfm	Outlet gas flow rate 88,000 acfm
Inlet pollutant conc. SO_2 - 160ppm Vol 460 mg SO_2/dscm	Outlet pollutant conc. SO_2 - 20 ppm Vol 92 mg SO_2/dscm
Inlet gas temp. 500 °F	Outlet gas temp. 220 (AFTER REHEAT) °F
Viscosity of inlet gas N.A. poise	Type of scrubbing solution utilized
Scrubber CIRC. flow rate 600 gpm	SODIUM HYDROXIDE OR SODIUM CARBONATE
Conc. of scrubbing MAKEUP solution 210 g NaOH/ℓ	Temp. of scrubbing solution (Out) 175 °F
Temp. of scrubbing solution (In) 165 °F	Density of scrubbing solution (In)
Pressure drop across scrubber VARIABLE - MAX. 60 in. H_2O	65 lbs./ft^3
Gas transfer rate N.A. lbs/ft^2 min	Type and size of packing N.A.
Number of mass transfer units N.A.	
Inside height of scrubber vessel NOT YET DETERMINED ft	Packing coefficient(s) N.A.
Packing depth N.A ft	Schmidt number N.A.
Percent operation at flood point N.A. %	Inside area of scrubber vessel VARIABLE ft^2 (or throat of venturi scrubber)
Liquid/gas ratio 6-10 (at inlet Cond.) gal/10^3 ft^3	Pollutant contact time in scrubber N.A sec
Particle cut size N.A. u	Estimated overall removal efficiency 80 %

Aerodynamic diameter of particles collected with 50% efficiency

D. Particle Size Information (if applicable):

a. Complete the table below for the size distribution of the particulate entering the scrubber, leaving the scrubber, the collection efficiency at each particle size, and the geometric standard deviation of the size distribution.

Dust Particle Size u	Size Analysis - Wt. %		Collection Efficiency (%)
	Inlet	Outlet	
0 - 1			
1 - 5			
5 - 10			
10 - 15			
15 - 20			
20 - 30			
30 - 50			
50			
Geometric standard deviation (inlet)_____			

b. Mass mean aerodynamic particle diameter_____u

c. Density of the particles_____lbs./ft^3

E. Attach manufacturer's literature and/or detailed specifications of the proposed device(s). Include any available source test data for this particular unit.

F. Submit design calculations which demonstrate control efficiency and outlet emission rate. Specify conditions (i.e. temperature, pressure) at which the data is presented.

G. Attach by sketch or flow diagram all equipment auxiliary to the scrubber(s) showing feed rates, make-up rates, sizes of holding tanks, etc. Include temperatures of the scrubbing solution(s) at all points where solubility and/or reaction rates need to be determined along with their respective equilibrium constants.

4. Description of Gas Mover: Not applicable (See p. 4-3-24 of Lurgi Demonstration Project Document)

A. Make, model, size, speed, capacity (attach).

B. Static pressures on each (attach).

C. Motor description (attach)_____hp.

APPLICATION FOR EMISSION PERMIT

This application shall be filled out completely - see instructions on reverse side.

1. PERMIT TO BE ISSUED TO: Telephone No. (303) 695-2400
RIO BLANCO OIL SHALE COMPANY

2. MAILING ADDRESS (include zip code):
2851 South Parker Road, Aurora, Colorado 80014

3. TYPE OF ORGANIZATION:
/ / Corporation /xx/ Partnership / / Individual Owner / / Governmental Agency

4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):
EMERGENCY GENERATOR

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment - Process Equipment TBD*
Days Per Year Source Will Be Operated <1, under normal operating conditions

9. STATUS (check and complete applicable items):

	Estimated Date Construction Will Begin	Estimated Date Construction Will Be Completed
/ XX / New Air Pollutant Source		
/ / Control Equipment Being Added to Existing Source		
/ / Activity Change	May 1981	January 1983

10. Check is enclosed to cover APPLICATION FILING FEE /XX/ $40.00
(see No. 10 on reverse side of this form)

11. ANTICIPATED START-UP DATE
January 1983

12. DATE OF APPLICATION
January 9, 1981

13. SIGNATURE OF LEGALLY AUTHORIZED PERSON
X J Blaine Miller

14. Type or print name and official title of person signing this application.
J. Blaine Miller, President, Rio Blanco Oil Shale Company

Date Received	15. REMARKS:

PCD 200C (REV. 3/80)

* To be determined

AIR POLLUTANT EMISSIONS NOTICE
(Stationary Source)

FIRM NAME: RIO BLANCO OIL SHALE COMPANY

PERMIT NO. ..... Date No.
(To be assigned by Health Dept)
EXIS... MODI...

MAIL ADDRESS: 2851 South Parker Rd., Aurora, CO PLANT LOCATION: Piceance Creek Route, Rifle, CO COUNTY: Rio Blanco

PERSON TO CONTACT REGARDING THIS INFORMATION: James W. Ericson TITLE: Environmental Coordinator PHONE: 695-2400

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION: Oil Shale Production

Will you accept collect calls? X Yes
Best hours to call: ...

A. GENERAL INFORMATION

No. of Employees	Land Area	Normal Operation of Plant* Hours/Day	Days/Week	Weeks/Year	Seasonal Throughput (% of Annual) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov
970 (Max.)		24	7	52	25	25	25	25

*Specify any significantly different schedule of a unit or process which emits air pollutants: Emergency electrical generator expected to operate less than one day per year.

B. STACK OR VENT INFORMATION FOR ..... (Identify which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture
20 ft	2.5 ft	1000 °F	7,400 ACFM	1500 ft/min	12 %

C. FUEL INFORMATION

Description of Combustion Unit	Design Rate (10^6BTU/Hr)	Kind of Fuel Burned	Annual Consumption (Tons, 10^3Gal, or 10^6SCF)	Heating Value (10^6BTU/Annual Unit)	Per Cent by Weight Sulfur(X.XX%)	Ash(XX.X%)	Seasonal Use (% of Annual Use) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Space (% Ar
Emergency electrical generator	12	Diesel	Variable	140,000/gal.	0.1-0.7	Trace	EMERGENCY ONLY				

D. PROCESS INFORMATION

Description of Processing Unit	Raw Materials, Solvents, Cleaning Agents, Waste, etc. Involved In Process	Annual Consumption (Specify Units)	Design Rate (Specify Units/Hour)	Finished Products Product Name or Description	Annual Output	(APCD Use) SCC

E. POLLUTION CONTROL EQUIPMENT

Pollutant	Type of Control Equipment Primary	Secondary	Overall Collection Efficiency	Cost of Control Equipment Initial Installation	Annual Total Operating Cost	Annual Energy Used (Specify Units & Type)	(To be completed by Air Pollution Control Division) Emissions Estimate Tons/Year	Uncontrolled Emissions Tons/Year	Allowable Emissions Tons/Year	Estimation Method
Particulate	--	--								
SO_x	--	--								
NO_x	--	--								
HC	--	--								
CO	--	--								
Pb	--	--								
Other:										

REMARKS: 1000 KW diesel powered generator. Additional data on the Emergency electrical generator are included in Section 4, Chapter 2 and Section 7, Chapter 5 of the Lurgi Demonstration Project Report

Signature of Person Legally Authorized to Supply Data: X J. Blaine Miller

Typed Name & Title: J. Blaine Miller, President, Rio Blanco Oil Shale Company

COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
Denver, Colorado 80220
(303) 320-4180

(For APCD Use) County ID	AIRS	Plant ID	Date of Record (Julian)	City ID	UTM Zone	Owner Code	Process Classif. SIC	IPP	UTM Coordinates Horizontal	Vertical	ECAP	Colorado Air Quality Control Regulations			Conf	Source Code

BOILER AND FUEL BURNING EQUIPMENT
INFORMATION SHEET

1. PLANT: (A) Mfr._____ (B) Model_____

2. TYPE OF PLANT: (Check applicable items)

__ Steam Heating
__ Process Steam
__ Water Heating
XX Other Purpose (Emergency Electrical Generator) (Specify)

3. FUEL FIRING EQUIPMENT: (Check applicable)

__ Gas Burner
__ Underfed Stoker
__ Pulverized-Fuel Fired
XX Oil Burner (Diesel Powered)
__ Traveling Grate Stoker
__ Cyclone Furnace
__ Convert. Burner
__ Spreader Stoker
__ Hand Fired
__ Auto Wood Waste
__ Other Stoker (Specify: _____)
__ Other (Specify: _____)

4. STOKERS: (Check where applicable) N/A

__ With Flyash Reinjection
__ Without Flyash Reinjection

5. PULVERIZED-FUEL FIRED: (Check where applicable) N/A

__ Vertical Fired
__ Tangential Fired
__ Horizontal Fired
__ Opposed Inclined-Fired
__ Other (_____) Specify

6. CYCLONE FURNACE: (Check where applicable) N/A

__ Screened Furnace
__ Open Furnace

7. TYPE FUEL - Attach typical analysis (proximate and ultimate)

Type	Grade or Spec.	% Sulfur	% Ash	Heat Content BTU/Unit	Rated Hourly Consumption	Annual Consumption
Oil (Diesel Fuel)	No. 1 or No. 2	0.1 to 0.7	Trace	140,000 Btu/gal	Variable	
Gas						
Coal						
Other						

APC 57C (Jan 78)

8. OUTPUT CONDITIONS Steam__ Water__ Other 7,400 ACFM

(A) Lb/Hr: Normal_____ Max._____

(B) Pressure N/A

(C) Temp. °F. N/A

(D) % Saturation N/A

(E) °F Superheat N/A

(F) Design Thermal Efficiency .N/A %

9. FLUE GAS (Estimate)

(A) Flow Rate_____ ACFM

(B) Temp. °F. 1,000

(C) % Moisture_____

(D) Exit Particulate Concentration 0.192 gr/ scf

(E) SO_2 Concentration 0.1 lbs/10^6 BTU

(F) NO_x Concentration 3.5 lbs/10^6 BTU

(G) Source of Emission Estimate EPA

10. EMISSION CONTROL EQUIPMENT: (Check where applicable)

(A) XX None
__ Mechanical Dust Collector
__ Electrostatic Precipitator
__ Wet Scrubber
__ Fabric Filter
__ Other (Specify:_____)

(B) Primary Control
Type of Control:
Make N/A
Model_____

Secondary Control
Type of Control:
Make N/A
Model_____

Attach appropriate supplementary information sheet for each piece of air pollution control equipment used.

11. STACK OR CHIMNEY:

(A) XX*Steel __ Masonry __ Concrete (Check one)

(B) Height Above Grade 20 (Ft.)

(C) Exit Dimensions 30 (In.)

(D) Diameter at Sampling Ports 30 (In.)

(E) Location of Sampling Ports (attach).

Note: Indicate location and height of nearby buildings on Plat Plan.

*Diesel Exhaust

12. AUXILIARY EQUIPMENT: Describe below any other emission sources which are associated with the combustion device described above. This includes such equipment as coal handling, ash disposal, etc. Complete specifications should also be attached.

APPLICATION FOR EMISSION PERMIT

This application shall be filled out completely - see instructions on reverse side.

1. PERMIT TO BE ISSUED TO: Telephone No. (303) 695-2400
RIO BLANCO OIL SHALE COMPANY

2. MAILING ADDRESS (include zip code):
2851 South Parker Road, Aurora, Colorado 80014

3. TYPE OF ORGANIZATION:
/ / Corporation /XX/ Partnership / / Individual Owner / / Governmental Agency

4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):
LURGI FLUE GAS STACK AND ELECTROSTATIC PRECIPITATOR

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment TBD* Process Equipment TBD*
Days Per Year Source Will Be Operated 365

9. STATUS (check and complete applicable items):

	Estimated Date Construction Will Begin	Estimated Date Construction Will Be Completed
/XX/ New Air Pollutant Source		
/ / Control Equipment Being Added to Existing Source		
/ / Activity Change	May 1981	January 1983

10. Check is enclosed to cover APPLICATION FILING FEE /XX/ $40.00
(see No. 10 on reverse side of this form)

11. ANTICIPATED START-UP DATE
January 1983

12. DATE OF APPLICATION
January 9, 1981

13. SIGNATURE OF LEGALLY AUTHORIZED PERSON
X J. Blaine Miller

14. Type or print name and official title of person signing this application.
J. Blaine Miller, President, Rio Blanco Oil Shale Company

Date Received

15. REMARKS:

APCD 200C (REV. 3/80)

* To be determined

Colorado Department of Health (Stationary Source) FIRM NAME RIO BLANCO OIL SHALE COMPANY

Permit No. (To be assigned by Health Dept) EXIS MOD 101 Page No. of

MAIL ADDRESS 2851 South Parker Rd., Aurora, CO PLANT LOCATION Piceance Creek Route, Rifle, CO COUNTY Rio Blanco

PERSON TO CONTACT REGARDING THIS INFORMATION James W. Ericson TITLE Environmental Coordinator PHONE 695-2400

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION Oil Shale Production Will you accept collect calls? Yes Best hours to call:

A. GENERAL INFORMATION		Normal Operation of Plant*			Seasonal Throughput (% of Annual)				*Specify any significantly different schedule of a unit or process which emits air pollutant
No. of Employees	Land Area	Hours/Day	Days/Week	Weeks/Year	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	
970 (est. max.)		24	7	52	25	25	25	25	

B. STACK OR VENT INFORMATION FOR (Identify which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture
300 ft	8 ft	460 °F	145,000 ACFM	2,900 ft/min	26 %

C. FUEL INFORMATION Description of Combustion Unit	Design Rate (10^6BTU/Hr)	Kind of Fuel Burned	Annual Consumption (Tons, 10^3gal, or 10^6SCF)	Heating Value (10^6BTU/Annual Unit)	Per Cent by Weight Sulfur(X.XX%)	Ash(XX.X%)	Seasonal Use (% of Annual Use) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Space (% Ar
Lurgi retort		Coke on shale	fcn of process				25	25	25	25	
		Product gas	and grade of		0.4		25	25	25	25	
		Natural gas	shale				25	25	25	25	

D. PROCESS INFORMATION Description of Processing Unit	Raw Materials, Solvents, Cleaning Agents, Waste, etc. Involved in Process	Annual Consumption (Specify Units)	Design Rate (Specify Units/Hour)	Finished Products Product Name or Description	Annual Output	(APCD Use) SCC
Lurgi surface retort	Oil Shale	1,606,000 ton/yr	183 tons/hr	raw shale oil	813,950 bbl	
	Processed shale	1,606,000 tons/yr	183 tons/hr	--		

E. POLLUTION CONTROL EQUIPMENT Pollutant	Type of Control Equipment Primary	Secondary	Overall Collection Efficiency	Cost of Control Equipment Initial Installation	Annual Total Operating Cost	Annual Energy Used (Specify Units & Type)	(To be completed by Air Pollution Control Division) Emissions Estimate Tons/Year	Uncontrolled Emissions Tons/Year	Allowable Emissions Tons/Year	Estimation Method
Particulate	Cyclone	ESP	99.98							
SO_x	Removed by process - See section 7, Chapter 5 DDP		~93							
NO_x	--	--	--							
HC	--	--	--							
CO	--	--	--							
Pb	--	--	--							
Other:										

REMARKS: Additional data on emission from the Lurgi retort flue stack are available in Section 4, Chapter 3 and Section 7, Chapter 5 of the Lurgi Demonstration Project report.

Signature of Person Legally Authorized to Supply Data J. Blaine Miller

Typed Name & Title J. Blaine Miller, President, Rio Blanco Oil Shale Company

COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
Denver, Colorado 80220
(303) 320-4180

(For APCD Use) County ID	AQCR	Point ID	Date of Record (Julian)	City ID	UTM Zone	Owner Code	Process Classif. SIC	IPP	UTM Coordinates Horizontal	Vertical	ECAP	Colorado Air Quality Control Regulations			Conf	Source Code

APPLICATION FOR EMISSION PERMIT

This application shall be filled out completely - see instructions on reverse side.

1. PERMIT TO BE ISSUED TO: Telephone No. (303) 695-2400
RIO BLANCO OIL SHALE COMPANY

2. MAILING ADDRESS (include zip code):
2851 South Parker Road, Aurora, Colorado 80014

3. TYPE OF ORGANIZATION:
/ / Corporation /XX/ Partnership / / Individual Owner / / Governmental Agency

4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):

AUXILIARY STEAM BOILERS

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment N/A Process Equipment
Days Per Year Source Will Be Operated 250

9. STATUS (check and complete applicable items):

	Estimated Date Construction Will Begin	Estimated Date Construction Will Be Completed
/XX/ New Air Pollutant Source		
/ / Control Equipment Being Added to Existing Source		
/ / Activity Change	May 1981	January 1983

10. Check is enclosed to cover APPLICATION FILING FEE /XX/ $40.00
(see No. 10 on reverse side of this form)

11. ANTICIPATED START-UP DATE
January 1983

12. DATE OF APPLICATION
January 9, 1981

13. SIGNATURE OF LEGALLY AUTHORIZED PERSON
X J. Blaine Miller

14. Type or print name and official title of person signing this application.
J. Blaine Miller, President, Rio Blanco Oil Shale Company

Date Received

15. REMARKS:

APCD 200C (REV. 3/80)

AIR POLLUTANT EMISSIONS NOTICE
Colorado Department of Health (Stationary Source)

FIRM NAME RIO BLANCO OIL SHALE COMPANY

PERMIT NO. ..... Date No. ..... NEW EXISTING MODIFICATION by Health Dept.

MAIL ADDRESS 2851 South Parker Rd., Aurora, CO PLANT LOCATION Piceance Creek Route, Rifle, CO COUNTY Rio Blanco

PERSON TO CONTACT REGARDING THIS INFORMATION James W. Ericson TITLE Environmental Coordinator PHONE 695-2400

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION Oil Shale Production Will you accept collect calls? X Yes Best hours to call: [illegible]

A. GENERAL INFORMATION		Normal Operation of Plant*			Seasonal Throughput (% of Annual)				*Specify any significantly different schedule of a unit or process which emits air pollutant
No. of Employees	Land Area	Hours/Day	Days/Week	Weeks/Year	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	
970 (Max.)		24	7	52	25	25	25	25	

B. STACK OR VENT INFORMATION FOR ..... (Identify which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture
100 ft	4.5 ft	350 °F	82,000 ACFM	5,160 ft/min	10 %

C. FUEL INFORMATION

Description of Combustion Unit	Design Rate (10^6BTU/Hr)	Kind of Fuel Burned	Annual Consumption (Tons, 10^3Gal, or 10^6SCF)	Heating Value (10^6BTU/Annual Unit)	Per Cent by Weight: Sulfur (X.XX%)	Per Cent by Weight: Ash (XX.X%)	Seasonal Use (% of Annual Use): Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Space (% Ar
Steam boiler	99 each	natural gas	784x10^6 SCF (each)		--	--	25	25	25	25	

D. PROCESS INFORMATION

Description of Processing Unit	Raw Materials, Solvents, Cleaning Agents, Waste, etc. Involved in Process	Annual Consumption (Specify Units)	Design Rate (Specify Units/Hour)	Finished Products: Product Name or Description	Finished Products: Annual Output	(APCD Use) SCC
Steam boiler						

E. POLLUTION CONTROL EQUIPMENT

Pollutant	Type of Control Equipment: Primary	Type of Control Equipment: Secondary	Overall Collection Efficiency	Cost of Control Equipment: Initial Installation	Cost of Control Equipment: Annual Total Operating Cost	Cost of Control Equipment: Annual Energy Used (Specify Units & Type)	(To be completed by Air Pollution Control Division) Emissions Estimate Tons/Year	Uncontrolled Emissions Tons/Year	Allowable Emissions Tons/Year	Estimation Method
Particulate	--	--								
SO_x	--	--								
NO_x	--	--								
HC	--	--								
CO	--	--								
Pb	--	--								
Other:										

REMARKS: Additional data on the steam boiler are included in Section 4, Chapter 3, and Section 7, Chapter 5 of the Lurgi Demonstration Project report

Signature of Person Legally Authorized to Supply Data: X J. Blaine Miller

Typed Name & Title: J. Blaine Miller, President, Rio Blanco Oil Shale Company

COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
Denver, Colorado 80220
(303) 320-4160

(For APCD Use) County ID	AQCR	Plant ID	Date of Record (Julian)	City ID	UTM Zone	Owner Code	Process Classif. SIC	Process Classif. IPP	UTM Coordinates: Horizontal	UTM Coordinates: Vertical	ECAP	Colorado Air Quality Control Regulations			Conf	Source Code

INFORMATION SHEET

1. PLANT: (A) Mfr._____ (B) Model_____

2. TYPE OF PLANT: (Check applicable items)

XX Steam Heating (Steam Boiler) __ Process Steam

__ Water Heating __ Other Purpose (_____ Specify)

3. FUEL FIRING EQUIPMENT: (Check applicable)

XX Gas Burner	__ Underfed Stoker	__ Pulverized-Fuel Fired
__ Oil Burner	__ Traveling Grate Stoker	__ Cyclone Furnace
__ Convert. Burner	__ Spreader Stoker	__ Hand Fired
__ Auto Wood Waste	__ Other Stoker (Specify: _____)	__ Other (Specify: _____)

4. STOKERS: (Check where applicable) N/A

__ With Flyash Reinjection __ Without Flyash Reinjection

5. PULVERIZED-FUEL FIRED: (Check where applicable) N/A

__ Vertical Fired __ Tangential Fired __ Horizontal Fired

__ Opposed Inclined-Fired __ Other (_____ Specify)

6. CYCLONE FURNACE: (Check where applicable) N/A

__ Screened Furnace __ Open Furnace

7. TYPE FUEL - Attach typical analysis (proximate and ultimate) Tract See Attachment

Type	Grade or Spec.	% Sulfur	% Ash	Heat Content BTU/Unit	Rated Hourly Consumption	Annual Consumption
Oil						
Gas	Natural Gas					
Coal						
Other						

APC 57C (Jan 78)

NATURAL GAS COMPOSITION IS AS FOLLOWS:

Constituent	Mole %
Carbon Dioxide	0.87
Oxygen	0.04
Nitrogen	2.02
Methane	85.99
Ethane	6.63
Propane	2.87
Isobutane	0.50
N-Butane	0.78
Isopentane	0.13
N-Pentane	0.08
Hexane Plus	0.09
Higher Heating Value	1106. BTU/CF at 14.65 PSIA Dry
Gravity 0.652	Molecular Weight 18.885

8. OUTPUT CONDITIONS Steam XX Water __ Other ____

(A) Lb/Hr: Normal 40,000 Max. 145,000

(B) Pressure 550 PSIG

(C) Temp. °F. 600

(D) % Saturation superheated

(E) °F Superheat 170

(F) Design Thermal Efficiency .71 %

9. FLUE GAS (Estimate)

(A) Flow Rate 82,000 max ACFM

(B) Temp. °F. 350

(C) % Moisture 10% by weight

(D) Exit Particulate Concentration -- gr/dscf

(E) SO_2 Concentration -- lbs/10^6 BTU

(F) NO_x Concentration 0.2 lbs/10^6 BTU

(G) Source of Emission Estimate EPA

10. EMISSION CONTROL EQUIPMENT: (Check where applicable)

(A) XX None __ Mechanical Dust Collector __ Electrostatic Precipitator

__ Wet Scrubber __ Fabric Filter __ Other (Specify: ____)

(B) Primary Control Type of Control:

Make N/A

Model ____

Secondary Control Type of Control:

Make N/A

Model ____

Attach appropriate supplementary information sheet for each piece of air pollution control equipment used.

11. STACK OR CHIMNEY:

(A) XX Steel __ Masonry __ Concrete (Check one)

(B) Height Above Grade 100 (Ft.)

(C) Exit Dimensions 54 (In.)

(D) Diameter at Sampling Ports 54 (In.)

(E) Location of Sampling Ports (attach).

Note: Indicate location and height of nearby buildings on Plat Plan.

12. AUXILIARY EQUIPMENT: Describe below any other emission sources which are associated with the combustion device described above. This includes such equipment as coal handling, ash disposal, etc. Complete specifications should also be attached.

This application shall be filled out completely - see instructions on reverse side.

1. PERMIT TO BE ISSUED TO: Telephone No. (303) 695-2400
RIO BLANCO OIL SHALE COMPANY

2. MAILING ADDRESS (include zip code):
2851 South Parker Road, Aurora, Colorado 80014

3. TYPE OF ORGANIZATION:
/ / Corporation /XX/ Partnership / / Individual Owner / / Governmental Agency

4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):

SHALE ORE CRUSHING UNIT

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment $325,000 Process Equipment TBD*
Days Per Year Source Will Be Operated 365

9. STATUS (check and complete applicable items):

	Estimated Date Construction Will Begin	Estimated Date Construction Will Be Completed
/XX/ New Air Pollutant Source		
/ / Control Equipment Being Added to Existing Source		
/ / Activity Change	May 1981	January 1983

10. Check is enclosed to cover APPLICATION FILING FEE /XX/ $40.00
(see No. 10 on reverse side of this form)

11. ANTICIPATED START-UP DATE
January 1983

12. DATE OF APPLICATION
January 9, 1981

13. SIGNATURE OF LEGALLY AUTHORIZED PERSON
X J. Blaine Miller

14. Type or print name and official title of person signing this application.
J. Blaine Miller, President, Rio Blanco Oil Shale Company

Date Received	15. REMARKS:

CD 200C (REV. 3/80)
*To be determined

AIR POLLUTANT EMISSIONS NOTICE
Co[redacted] Dep[redacted]t of [redacted] F[redacted]NZ RIO BLANCO OIL SHALE COMPANY [redacted]
(Stationary Source)

PERMIT NO. (T[redacted]ssig[redacted] Heal[redacted]t) Page No. [redacted]
NEW__ EXISTING__ MODIFICATION__ FOLLOW UP

MAIL ADDRESS 2851 South Parker Rd., Aurora, CO PLANT LOCATION Piceance Creek Route, Rifle, CO COUNTY Rio Blanco

PERSON TO CONTACT REGARDING THIS INFORMATION James W. Ericson TITLE Environmental Coordinator PHONE 695-2400

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION Oil Shale Production Will you accept collect calls? X Yes __ No
Best hours to call: Any

A. GENERAL INFORMATION

No. of Employees	Land Area	Normal Operation of Plant* Hours/Day	Days/Week	Weeks/Year	Seasonal Throughput (% of Annual) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov
970 (2-shift max.)		12	7	52	25	25	25	25

*Specify any significantly different schedule of a unit or process which emits air pollutants:

B. STACK OR VENT INFORMATION FOR ..... (Identify which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture	
N/A ft	ft	°F	ACFM	ft/min	%	Centralized baghouse - assume surface level emission (See attached information)

C. FUEL INFORMATION

Description of Combustion Unit	Design Rate (10^6BTU/Hr)	Kind of Fuel Burned	Annual Consumption (Tons, 10^3Gal, or 10^6SCF)	Heating Value (10^6BTU/Annual Unit)	Per Cent by Weight Sulfur(X.XX%)	Ash(XX.X%)	Seasonal Use (% of Annual Use) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Space Htr (% Ann.)

D. PROCESS INFORMATION

Description of Processing Unit	Raw Materials, Solvents, Cleaning Agents, Waste, etc. Involved in Process	Annual Consumption (Specify Units)	Design Rate (Specify Units/Hour)	Finished Products Product Name or Description	Finished Products Annual Output	(APCD Use) SCC
Shale ore crushing unit	Shale ore	1,401,600 tons	320 tons/hr	Crushed ore	1,401,600 tons	

E. POLLUTION CONTROL EQUIPMENT

Pollutant	Type of Control Equipment Primary	Type of Control Equipment Secondary	Overall Collection Efficiency	Cost of Control Equipment Initial Installation	Annual Total Operating Cost	Annual Energy Used (Specify Units & Type)	(To be completed by Air Pollution Control Division) Emissions Estimate Tons/Year	Uncontrolled Emissions Tons/Year	Allowable Emissions Tons/Year	Estimation Method
Particulate	baghouse	--	99%	$325,000	$10,862	271,560 KWH				
SO_x	--	--	--	--	--	--				
NO_x	--	--	--	--	--	--				
HC	--	--	--	--	--	--				
CO	--	--	--	--	--	--				
Pb	--	--	--	--	--	--				
Other:										

REMARKS: See attached information and Section 3 of the Lurgi Demonstration Project Report for additional information.

Signature of Person Legally Authorized to Supply Data X J. Blaine Miller

Typed Name & Title J. Blaine Miller, President, Rio Blanco Oil Shale Company

COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
Denver, Colorado 80220
(303) 320-4180

(For APCD Use) County ID	AQCR	Plant ID	Date of Record (Julian)	City ID	UTM Zone	Owner Code	Process Classif. SIC	IPP	UTM Coordinates Horizontal	Vertical	ECAP	Colorado Air Quality Control Regulations			Conf	Source Code	

-26-

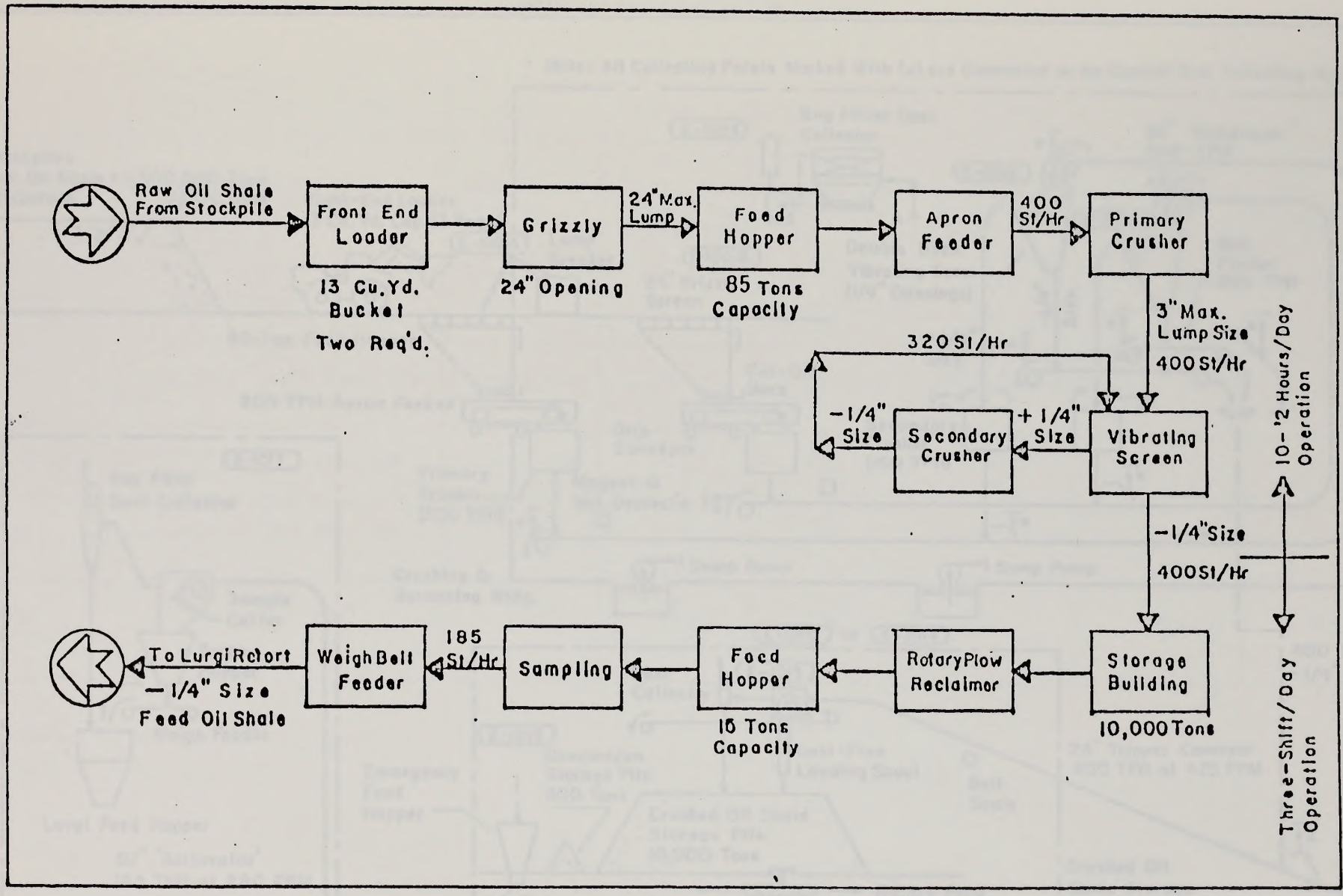

FIGURE 1

BLOCK FLOW DIAGRAM - OIL SHALE PREPARATION

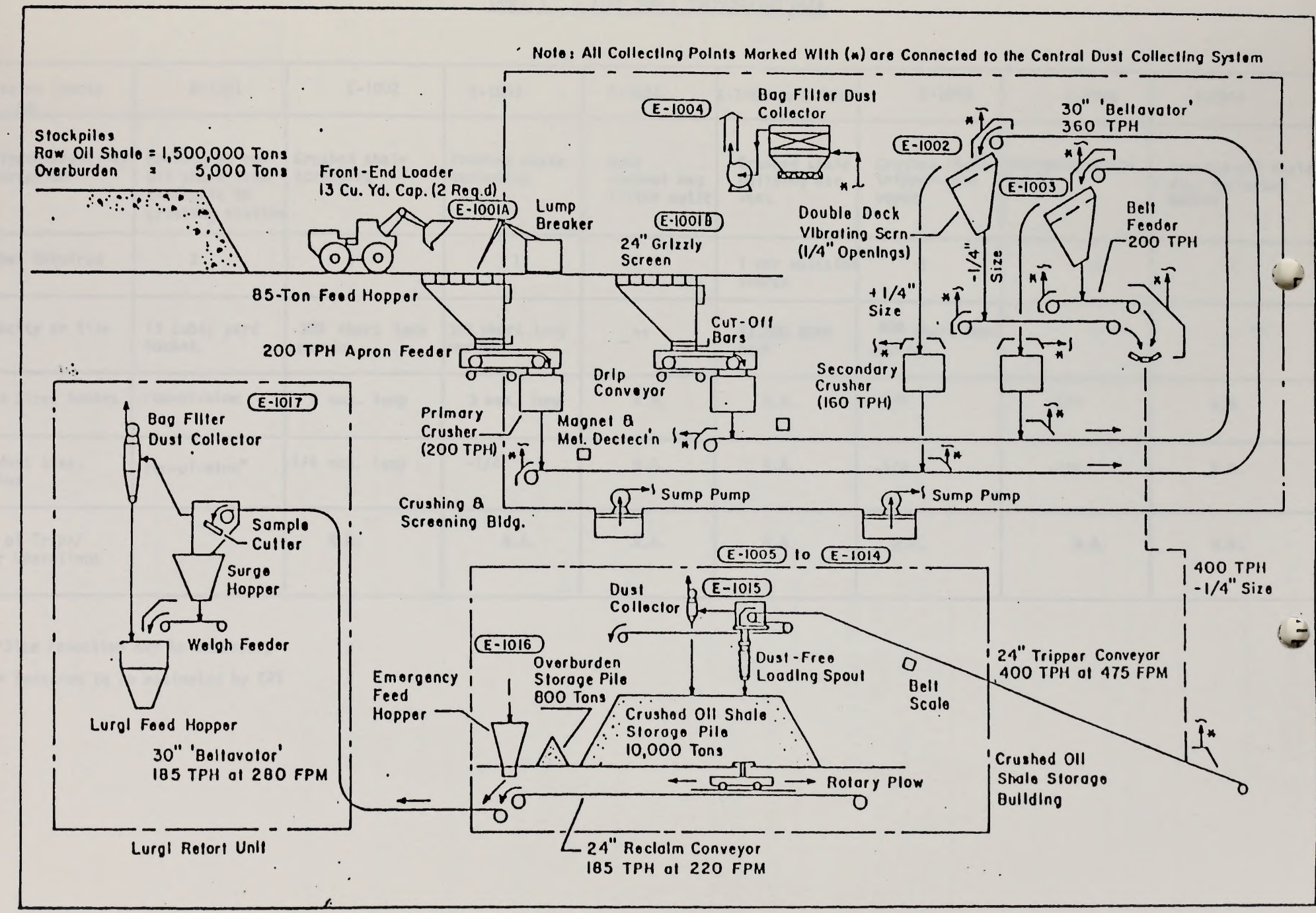

Figure 2

Schematic Flow Diagram - Retort Feed Shale Preparation

RIO BLANCO OIL SHALE COMPANY
LURGI SURFACE RETORT DEMONSTRATION PLANT
TABLE I - FEED SHALE PREPARATION DATA

Emission Source No.	E-1001	E-1002	E-1003	E-1004	E-1005 to E-1014	E-1015	E-1016	E-1017
Equipment/Facility Description	Reclaiming raw oil shale from stockpile to crushing station	Crushed shale screening	Crushed shale screening	Dust control bag filter outlet	Crushed shale building air vent	Crushed shale tripper conveyor	Emergency shale feeder	Crushed oil shale dust collector outlet
Number Required	2	1	1	1	1 per emission source	1	1	1
Capacity or Size	13 cubic yard bucket	320 short tons per hr.	320 short tons per hr.	-**	13,200 SCFM each	400 short tons per hr.	-**	-**
Feed Size, inches	run-of-mine	3 max. lump	3 max. lump	N.A.	N.A.	-1/4	-1/4	N.A.
Product Size, inches	run-of-mine*	-1/4 max. lump	-1/4	N.A.	N.A.	-1/4	-1/4	N.A.
No. of Trips/ 8 hr Operations		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

*Size reduction may be necessary

** Emission to be estimated by ERT

This application shall be filled out completely - see instructions on reverse side.

1. PERMIT TO BE ISSUED TO: Telephone No. (303) 695-2400
RIO BLANCO OIL SHALE COMPANY

2. MAILING ADDRESS (include zip code):
2851 South Parker Road, Aurora, Colorado 80014

3. TYPE OF ORGANIZATION:
/ / Corporation /XX/ Partnership / / Individual Owner / / Governmental Agency

4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):

PETROLEUM STORAGE TANKS

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment N/A
Process Equipment
Days Per Year Source Will Be Operated 365

9. STATUS (check and complete applicable items):

	Estimated Date Construction Will Begin	Estimated Date Construction Will Be Completed
/XX/ New Air Pollutant Source		
/ / Control Equipment Being Added to Existing Source		
/ / Activity Change	May 1981	January 1983

10. Check is enclosed to cover APPLICATION FILING FEE /XX/ $40.00
(see No. 10 on reverse side of this form)

11. ANTICIPATED START-UP DATE
January 1983

12. DATE OF APPLICATION
January 9, 1981

13. SIGNATURE OF LEGALLY AUTHORIZED PERSON
X J. Blaine Miller

14. Type or print name and official title of person signing this application.
J. Blaine Miller, President, Rio Blanco Oil Shale Company

Date Received	15. REMARKS:

APCD 200C (REV. 3/80)

4210 E. 11th Avenue, Denver, Colorado - 80220 - Ph.: 388 6111 Ext. 371

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off-tract property) E-6001 on emission plot plan

3. TANK IDENTIFICATION (NUMBER OR NAME): Product Storage Tank

4. TANK CAPACITY: 45,000 BARRELS GALLONS

5. TANK DIMENSIONS: DIAMETER 82' HEIGHT 48' LENGTH _____ WIDTH _____

6. TANK SHAPE: CYLINDRICAL [X] SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE _____

TANK MATERIALS OF CONSTRUCTION: STEEL [X] WOOD ☐ OTHER ☐ SPECIFY _____

8. TANK PAINT: Insulated CHALKING WHITE ☐ LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

TANK CONDITION: GOOD [X] FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION [X] ALTERATION ☐

11. TYPE OF TANK: (CHECK ALL APPLICABLE) FIXED ROOF ☐ PRESSURE ☐ INTERNALLY HEATED [X] UNDERGROUND ☐
FLOATING ROOF [X] OPEN TOP ☐ INSULATED [X] OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON [X] OTHER ☐ DESCRIBE _____

TYPE OF SEAL: SINGLE ☐ DOUBLE [X] OTHER ☐ DESCRIBE _____

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED [X] OTHER ☐ DESCRIBE _____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE: NONE

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL: NONE

	Number	Pressure Setting	Vacuum Setting	Discharging To: (Check) Atmosphere	Vapor Control	Flare
Combination						
Pressure						
Vacuum						
Open						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK: Product shale oil DENSITY: 7.4 LBS/GAL. (OR) _____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK:
MINIMUM TEMPERATURE _____ °F MAXIMUM TEMPERATURE _____ °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).

VAPOR PRESSURE: - LBS. REID (OR) 0.5 LBS. PER SQ. IN. ABSOLUTE AT 140 °F

INITIAL BOILING POINT: _____ °F

FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: _____ °F

18. OPERATIONAL DATA: SUBMERGED LOADING OPERATION

MAXIMUM FILLING RATE: 100 BARRELS PER HOUR (OR) _____ GALLONS PER HOUR

AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) 24 FT

AVERAGE THROUGHPUT: PHASE I - 200,000 / PHASE II - 300,000 BARRELS PER ~~DAY~~ YEAR (OR) _____ GALLONS PER DAY

TANK TURNOVERS PER YEAR: 5-7

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:

NAME OF SOLVENT: N.A. NAME OF MATERIAL DISSOLVED: _____

CONCENTRATION OF MATERIAL DISSOLVED: _____ % BY WEIGHT (OR) _____ % BY VOLUME (OR _____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:

IDENTIFY THE MATERIAL: N.A.

PRESSURE AT WHICH MATERIAL IS STORED: _____ LBS. PER SQ. IN. GAGE AT _____ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J. Blaine Miller

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.

NAME X J. Blaine Miller

TITLE President, Rio Blanco Oil Shale Company

APC-35 (Rev. 2-75-40)

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off-tract property) E-6002 on emission plot plan

3. TANK IDENTIFICATION (NUMBER OR NAME): Product Storage Tank

4. TANK CAPACITY: 45,000 BARRELS GALLONS

5. TANK DIMENSIONS: DIAMETER 82' HEIGHT 48' LENGTH _____ WIDTH _____

6. TANK SHAPE: CYLINDRICAL [X] SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE _____

7. TANK MATERIALS OF CONSTRUCTION: STEEL [X] WOOD ☐ OTHER ☐ SPECIFY _____

8. TANK PAINT: Insulated CHALKING WHITE ☐ LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

9. TANK CONDITION: GOOD [X] FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION [X] ALTERATION ☐

11. TYPE OF TANK: (CHECK ALL APPLICABLE) FIXED ROOF ☐ PRESSURE ☐ INTERNALLY HEATED [X] UNDERGROUND ☐
FLOATING ROOF [X] OPEN TOP ☐ INSULATED [X] OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON [X] OTHER ☐ DESCRIBE _____

TYPE OF SEAL: SINGLE ☐ DOUBLE [X] OTHER ☐ DESCRIBE _____

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED [X] OTHER ☐ DESCRIBE _____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE: NONE

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL: NONE

	NUMBER	PRESSURE SETTING	VACUUM SETTING	DISCHARGING TO: (CHECK) ATMOSPHERE	VAPOR CONTROL	FLARE
COMBINATION						
PRESSURE						
VACUUM						
OPEN						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK: Product Shale Oil DENSITY: 7.4 LBS/GAL. (OR) _____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK:
MINIMUM TEMPERATURE _____ °F MAXIMUM TEMPERATURE _____ °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).
VAPOR PRESSURE: _____ LBS. REID (OR) 0.5 LBS. PER SQ. IN. ABSOLUTE AT 140 °F
INITIAL BOILING POINT: _____ °F
FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: _____ °F

18. OPERATIONAL DATA: SUBMERGED LOADING OPERATION
MAXIMUM FILLING RATE: 100 BARRELS PER HOUR (OR) _____ GALLONS PER HOUR
AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) 24 FT
AVERAGE THROUGHPUT: PHASE I - 300,000 PHASE II - 300,000 BARRELS PER ~~DAY~~ YEAR (OR) _____ GALLONS PER DAY
TANK TURNOVERS PER YEAR: 5-7

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:
NAME OF SOLVENT: N.A. NAME OF MATERIAL DISSOLVED: _____
CONCENTRATION OF MATERIAL DISSOLVED: _____ % BY WEIGHT (OR) _____ % BY VOLUME (OR _____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:
IDENTIFY THE MATERIAL: _____
PRESSURE AT WHICH MATERIAL IS STORED: _____ LBS. PER SQ. IN. GAGE AT _____ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM
SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J. Blaine Miller

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.
NAME X J. Blaine Miller
TITLE President, Rio Blanco Oil Shale Company

APC-35 (Rev. 2-75-40)

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off-tract property) E-6006 on emission plot plan

TANK IDENTIFICATION (NUMBER OR NAME): Product Oil Loading Station

4. TANK CAPACITY: BARRELS _____ GALLONS _____

TANK DIMENSIONS: DIAMETER _____ HEIGHT _____ LENGTH _____ WIDTH _____

6. TANK SHAPE: CYLINDRICAL ☐ SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE _____

TANK MATERIALS OF CONSTRUCTION: STEEL ☐ WOOD ☐ OTHER ☐ SPECIFY _____

8. TANK PAINT: CHALKING WHITE ☐ LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

TANK CONDITION: GOOD ☐ FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION ☐ ALTERATION ☐

11. TYPE OF TANK: (CHECK ALL APPLICABLE) FIXED ROOF ☐ FLOATING ROOF ☐ PRESSURE ☐ OPEN TOP ☐ INTERNALLY HEATED ☐ INSULATED ☐ UNDERGROUND ☐ OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON ☐ OTHER ☐ DESCRIBE _____

TYPE OF SEAL: SINGLE ☐ DOUBLE ☐ OTHER ☐ DESCRIBE _____

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED ☐ OTHER ☐ DESCRIBE _____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE:

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL:

	Number	Pressure Setting	Vacuum Setting	Discharging to: (Check) Atmosphere	Vapor Control	Flare
Combination						
Pressure						
Vacuum						
Open						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK:
DENSITY: _____ LBS/GAL. (OR) _____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK:
MINIMUM TEMPERATURE _____ °F MAXIMUM TEMPERATURE _____ °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).

VAPOR PRESSURE: _____ LBS. REID (OR) _____ LBS. PER SQ. IN. ABSOLUTE AT _____ °F

INITIAL BOILING POINT: _____ °F

FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: _____ °F

18. OPERATIONAL DATA: Submerged Loading

MAXIMUM FILLING RATE: _____ BARRELS PER HOUR (OR) 36,000 GALLONS PER HOUR

AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) N/A FT

AVERAGE THROUGHPUT: _____ BARRELS PER DAY (OR) 84,000 GALLONS PER DAY

TANK TURNOVERS PER YEAR: N/A

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:

NAME OF SOLVENT: N/A NAME OF MATERIAL DISSOLVED: _____

CONCENTRATION OF MATERIAL DISSOLVED: _____ % BY WEIGHT (OR) _____ % BY VOLUME (OR _____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:

IDENTIFY THE MATERIAL: N/A

PRESSURE AT WHICH MATERIAL IS STORED: _____ LBS. PER SQ. IN. GAGE AT _____ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J Blaine Miller

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.

NAME X J. Blaine Miller

TITLE President, Rio Blanco Oil Shale Company

APC-35 (Rev. 2-75-40)

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off-tract property) E-6007 on emission plot plan

TANK IDENTIFICATION (NUMBER OR NAME): Diesel Fuel Storage Tank

4. TANK CAPACITY: BARRELS 572 GALLONS

TANK DIMENSIONS: DIAMETER 15' HEIGHT 20' LENGTH _____ WIDTH _____

6. TANK SHAPE: CYLINDRICAL [X] SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE _____

TANK MATERIALS OF CONSTRUCTION: STEEL [X] WOOD ☐ OTHER ☐ SPECIFY _____

8. TANK PAINT: CHALKING WHITE [X] LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

TANK CONDITION: GOOD [X] FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION [X] ALTERATION ☐

11. TYPE OF TANK: (CHECK ALL APPLICABLE) FIXED ROOF [X] CONE FLOATING ROOF ☐ PRESSURE ☐ OPEN TOP ☐ INTERNALLY HEATED ☐ INSULATED ☐ UNDERGROUND ☐ OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON ☐ OTHER ☐ DESCRIBE _____

TYPE OF SEAL: SINGLE ☐ DOUBLE ☐ OTHER ☐ DESCRIBE _____

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED ☐ OTHER ☐ DESCRIBE _____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE:

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL: to follow

	Number	Pressure Setting	Vacuum Setting	Discharging to: (Check) Atmosphere	Vapor Control	Flare
Combination						
Pressure						
Vacuum						
Open						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK: Diesel Fuel DENSITY: 6.9 LBS/GAL. (OR) _____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK: MINIMUM TEMPERATURE 30 °F MAXIMUM TEMPERATURE 105 °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).

VAPOR PRESSURE: _____ LBS. REID (OR) 0.5 Max LBS. PER SQ. IN. ABSOLUTE AT 100 °F

INITIAL BOILING POINT: _____ °F

FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: _____ °F

18. OPERATIONAL DATA: Submerged Loading

MAXIMUM FILLING RATE: _____ BARRELS PER HOUR (OR) _____ GALLONS PER HOUR

AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) 18 FT

AVERAGE THROUGHPUT: 3,000 BARRELS PER Year (OR) _____ GALLONS PER DAY

TANK TURNOVERS PER YEAR: ~5

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:

NAME OF SOLVENT: N/A NAME OF MATERIAL DISSOLVED: _____

CONCENTRATION OF MATERIAL DISSOLVED: _____ % BY WEIGHT (OR) _____ % BY VOLUME (OR _____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:

IDENTIFY THE MATERIAL: N/A

PRESSURE AT WHICH MATERIAL IS STORED: _____ LBS. PER SQ. IN. GAGE AT _____ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J. Mueller

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.

NAME X

TITLE President, Rio Blanco Oil Shale Company

APC-35 (Rev. 2-75-40)

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off-tract property) E-6008 on emission plot plan

TANK IDENTIFICATION (NUMBER OR NAME): Diesel Fuel Day Tank

4. TANK CAPACITY: BARRELS 2,000 GALLONS

TANK DIMENSIONS: DIAMETER 6'6" HEIGHT _____ LENGTH 10'10" WIDTH _____

6. TANK SHAPE: CYLINDRICAL ☒ SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE _____

TANK MATERIALS OF CONSTRUCTION: STEEL ☒ WOOD ☐ OTHER ☐ SPECIFY _____

8. TANK PAINT: CHALKING WHITE ☒ LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

TANK CONDITION: GOOD ☒ FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION ☒ ALTERATION ☐

11. TYPE OF TANK: Horizontal FRP (CHECK ALL APPLICABLE) FIXED ROOF ☒ FLOATING ROOF ☐ PRESSURE ☒ OPEN TOP ☐ INTERNALLY HEATED ☐ INSULATED ☐ UNDERGROUND ☒ OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON ☐ OTHER ☐ DESCRIBE _____

TYPE OF SEAL: SINGLE ☐ DOUBLE ☐ OTHER ☐ DESCRIBE _____

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED ☐ OTHER ☐ DESCRIBE _____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE:

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL:

	Number	Pressure Setting	Vacuum Setting	Discharging To: (Check) Atmosphere	Vapor Control	Flare
Combination						
Pressure						
Vacuum						
Open						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK: Diesel fuel DENSITY: _____ LBS/GAL. (OR) _____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK: MINIMUM TEMPERATURE -30 °F MAXIMUM TEMPERATURE 105 °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).

VAPOR PRESSURE: _____ LBS. REID (OR) 0.5 Max. LBS. PER SQ. IN. ABSOLUTE AT 100 °F

INITIAL BOILING POINT: _____ °F

FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: _____ °F

18. OPERATIONAL DATA: Submerged Loading

MAXIMUM FILLING RATE: _____ BARRELS PER HOUR (OR) _____ GALLONS PER HOUR

AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) 6 FT

AVERAGE THROUGHPUT: 100 BARRELS PER Year (OR) _____ GALLONS PER DAY

TANK TURNOVERS PER YEAR: 2

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:

NAME OF SOLVENT: N/A NAME OF MATERIAL DISSOLVED: _____

CONCENTRATION OF MATERIAL DISSOLVED: _____ % BY WEIGHT (OR) _____ % BY VOLUME (OR _____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:

IDENTIFY THE MATERIAL: _____

PRESSURE AT WHICH MATERIAL IS STORED: _____ LBS. PER SQ. IN. GAGE AT _____ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J. Blaine Miller

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.

NAME X J. Blaine Miller

TITLE President, Rio Blanco Oil Shale Company

APC-35 (Rev. 2-75-40)

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off-tract property) E-6009 on emission plot plan

TANK IDENTIFICATION (NUMBER OR NAME): Diesel Fuel Day Tank

4. TANK CAPACITY: BARRELS 4,000 GALLONS

TANK DIMENSIONS: DIAMETER 6'6" HEIGHT ____ LENGTH 19'10" WIDTH ____

6. TANK SHAPE: CYLINDRICAL [X] SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE ____

TANK MATERIALS OF CONSTRUCTION: STEEL [X] WOOD ☐ OTHER ☐ SPECIFY ____

8. TANK PAINT: CHALKING WHITE [X] LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

TANK CONDITION: GOOD [X] FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION [X] ALTERATION ☐

11. TYPE OF TANK: Horizontal FRP (CHECK ALL APPLICABLE) FIXED ROOF [X] FLOATING ROOF ☐ PRESSURE [X] OPEN TOP ☐ INTERNALLY HEATED ☐ INSULATED ☐ UNDERGROUND [X] OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON ☐ OTHER ☐ DESCRIBE ____

TYPE OF SEAL: SINGLE ☐ DOUBLE ☐ OTHER ☐ DESCRIBE ____

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED ☐ OTHER ☐ DESCRIBE ____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE:

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL:

	NUMBER	PRESSURE SETTING	VACUUM SETTING	DISCHARGING TO: (CHECK) ATMOSPHERE	VAPOR CONTROL	FLARE
COMBINATION						
PRESSURE						
VACUUM						
OPEN						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK: Diesel fuel DENSITY: ____ LBS/GAL. (OR) ____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK: MINIMUM TEMPERATURE -30 °F MAXIMUM TEMPERATURE 105 °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).

VAPOR PRESSURE: ____ LBS. REID (OR) 0.5 Max. LBS. PER SQ. IN. ABSOLUTE AT 100 °F

INITIAL BOILING POINT: ____ °F

FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: ____ °F

18. OPERATIONAL DATA: Submerged Loading

MAXIMUM FILLING RATE: ____ BARRELS PER HOUR (OR) ____ GALLONS PER HOUR

AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) 6 FT

AVERAGE THROUGHPUT: 200 BARRELS PER Year (OR) ____ GALLONS PER DAY

TANK TURNOVERS PER YEAR: 2

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:

NAME OF SOLVENT: N/A NAME OF MATERIAL DISSOLVED: ____

CONCENTRATION OF MATERIAL DISSOLVED: ____ % BY WEIGHT (OR) ____ % BY VOLUME (OR ____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:

IDENTIFY THE MATERIAL: N/A

PRESSURE AT WHICH MATERIAL IS STORED: ____ LBS. PER SQ. IN. GAGE AT ____ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J Blaine Miller

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.

NAME X J. Blaine Miller

TITLE President, Rio Blanco Oil Shale Company

APC-35 (Rev. 2-75-40)

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off tract property) E-6010 on emission plot plan

TANK IDENTIFICATION (NUMBER OR NAME): Diesel Fuel Unloading Station

4. TANK CAPACITY: BARRELS _____ GALLONS _____

TANK DIMENSIONS: DIAMETER _____ HEIGHT _____ LENGTH _____ WIDTH _____

6. TANK SHAPE: CYLINDRICAL ☐ SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE _____

TANK MATERIALS OF CONSTRUCTION: STEEL ☐ WOOD ☐ OTHER ☐ SPECIFY _____

8. TANK PAINT: CHALKING WHITE ☐ LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

TANK CONDITION: GOOD ☐ FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION ☐ ALTERATION ☐

11. TYPE OF TANK: FIXED ROOF ☐ PRESSURE ☐ INTERNALLY HEATED ☐ UNDERGROUND ☐
(CHECK ALL APPLICABLE) FLOATING ROOF ☐ OPEN TOP ☐ INSULATED ☐ OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON ☐ OTHER ☐ DESCRIBE _____

TYPE OF SEAL: SINGLE ☐ DOUBLE ☐ OTHER ☐ DESCRIBE _____

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED ☐ OTHER ☐ DESCRIBE _____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE:

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL:

	Number	Pressure Setting	Vacuum Setting	Discharging To: (Check) Atmosphere	Vapor Control	Flare
Combination						
Pressure						
Vacuum						
Open						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK:
DENSITY: _____ LBS/GAL. (OR) _____ °A.P.I.

TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK:
MINIMUM TEMPERATURE _____ °F MAXIMUM TEMPERATURE _____ °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).

VAPOR PRESSURE: _____ LBS. REID (OR) _____ LBS. PER SQ. IN. ABSOLUTE AT _____ °F

INITIAL BOILING POINT: _____ °F

FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: _____ °F

18. OPERATIONAL DATA: Submerged Loading

MAXIMUM FILLING RATE: _____ BARRELS PER HOUR (OR) 200 GALLONS PER minute

AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) N/A FT

AVERAGE THROUGHPUT: _____ BARRELS PER DAY (OR) N/A GALLONS PER DAY

TANK TURNOVERS PER YEAR: _____

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:

NAME OF SOLVENT: N/A NAME OF MATERIAL DISSOLVED: _____

CONCENTRATION OF MATERIAL DISSOLVED: _____ % BY WEIGHT (OR) _____ % BY VOLUME (OR _____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:

IDENTIFY THE MATERIAL: N/A

PRESSURE AT WHICH MATERIAL IS STORED: _____ LBS. PER SQ. IN. GAGE AT _____ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J. Blaine Miller

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.

NAME X J. Blaine Miller

TITLE President, Rio Blanco Oil Shale Company

APC-35 (Rev. 2-75-40)

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off tract property) E-6011 on Emission Plot Plan

3. TANK IDENTIFICATION (NUMBER OR NAME): Gasoline Storage Tank

4. TANK CAPACITY: BARRELS 143 GALLONS

5. TANK DIMENSIONS: DIAMETER 8 HEIGHT 18'9" LENGTH ____ WIDTH ____

6. TANK SHAPE: CYLINDRICAL ☒ SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE ____

7. TANK MATERIALS OF CONSTRUCTION: STEEL ☒ WOOD ☐ OTHER ☐ SPECIFY ____

8. TANK PAINT: CHALKING WHITE ☒ LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

9. TANK CONDITION: GOOD ☒ FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION ☒ ALTERATION ☐

11. TYPE OF TANK: (CHECK ALL APPLICABLE) FIXED ROOF ☒ PRESSURE ☒ INTERNALLY HEATED ☐ UNDERGROUND ☒
FLOATING ROOF ☐ OPEN TOP ☐ INSULATED ☐ OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:
TYPE OF ROOF: DOUBLE DECK ☐ PONTOON ☐ OTHER ☐ DESCRIBE ____
TYPE OF SEAL: SINGLE ☐ DOUBLE ☐ OTHER ☐ DESCRIBE ____
TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED ☐ OTHER ☐ DESCRIBE ____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE:

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL: to follow

	NUMBER	PRESSURE SETTING	VACUUM SETTING	DISCHARGING TO: (CHECK) ATMOSPHERE	VAPOR CONTROL	FLARE
COMBINATION						
PRESSURE						
VACUUM						
OPEN						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK: Gasoline
DENSITY: ____ LBS/GAL. (OR) ____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK:
MINIMUM TEMPERATURE -30 °F MAXIMUM TEMPERATURE 105 °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).
VAPOR PRESSURE: ____ LBS. REID (OR) 0.5 LBS. PER SQ. IN. ABSOLUTE AT ____ °F
INITIAL BOILING POINT: ____ °F
FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: ____ °F

18. OPERATIONAL DATA: Submerged Loading
MAXIMUM FILLING RATE: ____ BARRELS PER HOUR (OR) ____ GALLONS PER HOUR
AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) 7'6"
AVERAGE THROUGHPUT: 1,667 BARRELS PER year (OR) ____ GALLONS PER DAY
TANK TURNOVERS PER YEAR: 12

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:
NAME OF SOLVENT: N/A NAME OF MATERIAL DISSOLVED: ____
CONCENTRATION OF MATERIAL DISSOLVED: ____ % BY WEIGHT (OR) ____ % BY VOLUME (OR ____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:
IDENTIFY THE MATERIAL: N/A
PRESSURE AT WHICH MATERIAL IS STORED: ____ LBS. PER SQ. IN. GAGE AT ____ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM
SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J Blaine Miller

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.
NAME X J. Blaine Miller
TITLE President, Rio Blanco Oil Shale Company

APC-35 (Rev. 2-75-40)

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off-tract property) E-6012 on emission plot plan

3. TANK IDENTIFICATION (NUMBER OR NAME): Waste Oil Storage Tank

4. TANK CAPACITY: BARRELS 238 GALLONS

5. TANK DIMENSIONS: DIAMETER 12' HEIGHT 12' LENGTH ____ WIDTH ____

6. TANK SHAPE: CYLINDRICAL ☒ SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE ____

7. TANK MATERIALS OF CONSTRUCTION: STEEL ☒ WOOD ☐ OTHER ☐ SPECIFY ____

8. TANK PAINT: CHALKING WHITE ☒ LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

9. TANK CONDITION: GOOD ☒ FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION ☒ ALTERATION ☐

11. TYPE OF TANK: (CHECK ALL APPLICABLE) FIXED ROOF ☐ FLOATING ROOF ☒ PRESSURE ☐ OPEN TOP ☐ INTERNALLY HEATED ☒ INSULATED ☒ UNDERGROUND ☐ OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON ☐ OTHER ☐ DESCRIBE ____

TYPE OF SEAL: SINGLE ☐ DOUBLE ☐ OTHER ☐ DESCRIBE ____

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED ☐ OTHER ☐ DESCRIBE ____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE:

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL:

	Number	Pressure Setting	Vacuum Setting	Discharging To: (Check) Atmosphere	Vapor Control	Flare
Combination						
Pressure						
Vacuum						
Open						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK: Waste oil DENSITY: ____ LBS/GAL. (OR) ____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK: MINIMUM TEMPERATURE ____ °F MAXIMUM TEMPERATURE 100 °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY). Variable

VAPOR PRESSURE: ____ LBS. REID (OR) ____ LBS. PER SQ. IN. ABSOLUTE AT ____ °F

INITIAL BOILING POINT: ____ °F

FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: ____ °F

18. OPERATIONAL DATA:

MAXIMUM FILLING RATE: N/A BARRELS PER HOUR (OR) ____ GALLONS PER HOUR

AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) ____ FT

AVERAGE THROUGHPUT: ____ BARRELS PER DAY (OR) ____ GALLONS PER DAY

TANK TURNOVERS PER YEAR: ____

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:

NAME OF SOLVENT: N/A NAME OF MATERIAL DISSOLVED: ____

CONCENTRATION OF MATERIAL DISSOLVED: ____ % BY WEIGHT (OR) ____ % BY VOLUME (OR ____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:

IDENTIFY THE MATERIAL: N/A

PRESSURE AT WHICH MATERIAL IS STORED: ____ LBS. PER SQ. IN. GAGE AT ____ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J Blaine Miller

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.

NAME X J. Blaine Miller

TITLE President, Rio Blanco Oil Shale Company

APC-35 (Rev. 2-75-40)

APPLICATION FOR EMISSION PERMIT

This application shall be filled out completely - see instructions on reverse side.

1. PERMIT TO BE ISSUED TO: Telephone No. (303) 695-2400
RIO BLANCO OIL SHALE COMPANY

2. MAILING ADDRESS (include zip code):
2851 South Parker Road, Aurora, Colorado 80014

3. TYPE OF ORGANIZATION:
/ / Corporation /XX/ Partnership / / Individual Owner / / Governmental Agency

4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):

HOT OIL HEATER

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment NA
Process Equipment
Days Per Year Source Will Be Operated 365

9. STATUS (check and complete applicable items):

	Estimated Date Construction Will Begin	Estimated Date Construction Will Be Completed
/XX/ New Air Pollutant Source		
/ / Control Equipment Being Added to Existing Source		
/ / Activity Change	May 1981	January 1983

10. Check is enclosed to cover APPLICATION FILING FEE /XX/ $40.00
(see No. 10 on reverse side of this form)

11. ANTICIPATED START-UP DATE
January 1983

12. DATE OF APPLICATION
January 9, 1981

13. SIGNATURE OF LEGALLY AUTHORIZED PERSON
X J. Blaine Miller

14. Type or print name and official title of person signing this application.
J. Blaine Miller, President, Rio Blanco Oil Shale Company

Date Received

15. REMARKS:

PCD 200C (REV. 3/80)

AIR POLLUTANT EMISSIONS NOTICE
Colorado Department of Health (Stationary Source)

FROM NAME: RIO BLANCO OIL SHALE COMPANY

PERMIT NO. (To be assigned by Health Dept) EXIST MODIF

Page No. OF

MAIL ADDRESS: 2851 South Parker Rd., Aurora, CO PLANT LOCATION: Piceance Creek Route, Rifle, CO COUNTY: Rio Blanco

PERSON TO CONTACT REGARDING THIS INFORMATION: James W. Ericson TITLE: Environmental Coordinator PHONE: 695-2400

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION: Oil Shale Production

Will you accept collect calls? X Yes — No

Best hours to call: [illegible]

A. GENERAL INFORMATION

No. of Employees	Land Area	Normal Operation of Plant* Hours/Day	Days/Week	Weeks/Year	Seasonal Throughput (% of Annual) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov
970 (est. max.)		24	7	52	25	25	25	25

*Specify any significantly different schedule of a unit or process which emits air pollutants

B. STACK OR VENT INFORMATION FOR (identify which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture
50 ft	1.2 ft	900 °F	3500 ACFM	2920 ft/min	14-15 Vol.%

C. FUEL INFORMATION

Description of Combustion Unit	Design Rate (10^6BTU/Hr)	Kind of Fuel Burned	Annual Consumption (Tons, 10^3Gal, or 10^6SCF)	Heating Value (10^6BTU/Annual Unit)	Per Cent by Weight Sulfur (X.XX%)	Ash (XX.X%)	Seasonal Use (% of Annual Use) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Space (% Ar
Oil Heater	5	Natural gas	30-35x10^6 SCF	33,000-39,000 10^6 BTU	--	--	25	25	25	25	

D. PROCESS INFORMATION

Description of Processing Unit	Raw Materials, Solvents, Cleaning Agents, Waste, etc. involved in Process	Annual Consumption (Specify Units)	Design Rate (Specify Units/Hour)	Finished Products Product Name or Description	Finished Products Annual Output	(APCD Use) SCC
Oil heater	None					

E. POLLUTION CONTROL EQUIPMENT

Pollutant	Type of Control Equipment Primary	Secondary	Overall Collection Efficiency	Cost of Control Equipment Initial Installation	Annual Total Operating Cost	Annual Energy Used (Specify Units & Type)	(To be completed by Air Pollution Control Division) Emissions Estimate Tons/Year	Uncontrolled Emissions Tons/Year	Allowable Emissions Tons/Year	Estimation Method
Particulate	--	--	--							
SO_x	--	--	--							
NO_x	--	--	--							
HC	--	--	--							
CO	--	--	--							
Pb	--	--	--							
Other:										

REMARKS: Additional data on the oil heater are included in Section 7, Chapter 5 of the Lurgi Demonstration Project repor

Signature of Person Legally Authorized to Supply Data: X J. Blaine Miller

Typed Name & Title: J. Blaine Miller, President, Rio Blanco Oil Shale Company

COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
Denver, Colorado 80220
(303) 320-4180

(For APCD Use) County ID	AQCR	Plant ID	Date of Record (Julian)	City ID	UTM Zone	Owner Code	Process Classif. SIC	UPF	UTM Coordinates Horizontal	Vertical	ECAP	Colorado Air Quality Control Regulations	Conf	Source Code

-41-

BOILER AND FUEL BURNING EQUIPMENT INFORMATION SHEET

1. PLANT: (A) Mfr. N/A (B) Model N/A

2. TYPE OF PLANT: (Check applicable items)

__ Steam Heating
__ Process Steam
__ Water Heating
XX Other Purpose (Oil Heating) (Specify)

3. FUEL FIRING EQUIPMENT: (Check applicable)

X Gas Burner
__ Underfed Stoker
__ Pulverized-Fuel Fired
__ Oil Burner
__ Traveling Grate Stoker
__ Cyclone Furnace
__ Convert. Burner
__ Spreader Stoker
__ Hand Fired
__ Auto Wood Waste
__ Other Stoker (Specify: _____)
__ Other (Specify: _____)

4. STOKERS: (Check where applicable) N/A

__ With Flyash Reinjection
__ Without Flyash Reinjection

5. PULVERIZED-FUEL FIRED: (Check where applicable) N/A

__ Vertical Fired
__ Tangential Fired
__ Horizontal Fired
__ Opposed Inclined-Fired
__ Other (_____) Specify

6. CYCLONE FURNACE: (Check where applicable) N/A

__ Screened Furnace
__ Open Furnace

7. TYPE FUEL - Attach typical analysis (proximate and ultimate) See Attachment

	Type	Grade or Spec.	% Sulfur	% Ash	Heat Content BTU/Unit	Rated Hourly Consumption	Annual Consumption
	Oil						
X	Gas	Natural Gas					
	Coal						
	Other						

8. OUTPUT CONDITIONS Steam__ Water__ Other__

(A) Lb/Hr: Normal_____ Max._____

(B) Pressure_____

(C) Temp. °F._____

(D) % Saturation_____

(E) °F Superheat_____

(F) Design Thermal Efficiency_____%

9. FLUE GAS (Estimate)

(A) Flow Rate 3300 ACFM

(B) Temp. °F. 900

(C) % Moisture_____

(D) Exit Particulate Concentration negligible gr/dscf

(E) SO_2 Concentration neglig. lbs/10^6 BTU

(F) NO_x Concentration 0.2 lbs/10^6 BTU

(G) Source of Emission Estimate EPA

10. EMISSION CONTROL EQUIPMENT: (Check where applicable)

(A) XX None __ Mechanical Dust Collector __ Electrostatic Precipitator

__ Wet Scrubber __ Fabric Filter __ Other (Specify:_____)

(B) Primary Control
Type of Control:

Make_____

Model_____

Secondary Control
Type of Control:

Make_____

Model_____

Attach appropriate supplementary information sheet for each piece of air pollution control equipment used.

11. STACK OR CHIMNEY:

(A) XX Steel __ Masonry __ Concrete (Check one)

(B) Height Above Grade 50 (Ft.)

(C) Exit Dimensions 14.4 (In.)

(D) Diameter at Sampling Ports 14.4 (In.)

(E) Location of Sampling Ports (attach).

Note: Indicate location and height of nearby buildings on Plat Plan.

12. AUXILIARY EQUIPMENT: Describe below any other emission sources which are associated with the combustion device described above. This includes such equipment as coal handling, ash disposal, etc. Complete specifications should also be attached.

NATURAL GAS COMPOSITION IS AS FOLLOWS:

Constituent	Mole %
Carbon Dioxide	0.87
Oxygen	0.04
Nitrogen	2.02
Methane	85.99
Ethane	6.63
Propane	2.87
Isobutane	0.50
N-Butane	0.78
Isopentane	0.13
N-Pentane	0.08
Hexane Plus	0.09
Higher Heating Value	1106. BTU/CF at 14.65 PSIA Dry
Gravity 0.652	Molecular Weight 18.885

APPENDIX

ADDITIONAL EMISSION DATA

LURGI DEMONSTRATION PROJECT

RIO BLANCO OIL SHALE COMPANY
LURGI SURFACE RETORT DEMONSTRATION PLANT
TABLE I - FEED SHALE PREPARATION DATA

Emission Source No.	E-1001	E-1002	E-1003	E-1004	E-1005 to E-1014	E-1015	E-1016	E-1017
Equipment/Facility Description	Reclaiming raw oil shale from stockpile to crushing station	Crushed shale screening	Crushed shale screening	Dust control bag filter outlet	Crushed shale building air vent	Crushed shale tripper conveyor	Emergency shale feeder	Crushed oil shale dust collector outlet
Number Required	2	1	1	1	1 per emission source	1	1	1
Capacity or Size	13 cubic yard bucket	320 short tons per hr.	320 short tons per hr.	-**	13,200 SCFM each	400 short tons per hr.	- **	- **
Feed Size, inches	run-of-mine	3 max. lump	3 max. lump	N.A.	N.A.	-1/4	-1/4	N.A.
Product Size, inches	run-of-mine*	-1/4 max. lump	-1/4	N.A.	N.A.	-1/4	-1/4	N.A.
No. of Trips/ 8 hr Operations		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

*Size reduction may be necessary

** Emission to be estimated by ERT

RIO BLANCO OIL SHALE COMPANY
LURGI SURFACE RETORT DEMONSTRATION PLANT
TABLE 1 - SUPPORT FACILITIES EMISSION DATA

Emission Source#	Description	Fuel: Heat Duty 10^6 BTU/HR (Input)	Fuel: Type	Fuel: % Sulfur	Emission: Flow lb/hr / ACFM	Emission: Temp. °F	Emission: Press. PSIA	Pollutant Emission Rate - LB/HR: Particulate Matter	(As NO_2) NOx	SO_2	CO	H_2S	Hydrocarbons (excl. Methane)	Opacity %	Remarks
	IV. OFF-GAS SYSTEM														
E-4001	Off-gas Incinerator stack														Incinerator/quench SO_2 scrubber
	Maximum Temporary (1)	140	Off-gas 980 BTU/SCF	0.4 by volume	375,000 / 128,000	220	11.4	-	48	19.4	-	-	-	<5	Opacity before vapor condensation. Stack height = 310'. Diameter = 6' - 6"
	Normal Product Gas	76.5	Off-gas 980 BTU/SCF	0.4 by volume	205,000 / 68,000	220	11.4	-	24	10.6	-	-	-	<5	
	NH_3/H_2O	0.5	950 BTU/SCF												
E-4002	Flare Stack Maximum Load (short duration) (2)	150	Nat. Gas		12,000 lb/hr										For emergency only if incinerator is out of service. Stack height = 75'. Tip diameter = 12"
	Maximum load (sustained) (3)	75			6,000 lb/hr										
	Normal load	0.6 (Pilots)													
	NOTES: (1) During shutdown. Duration 5 - 10 minutes. (2) Less than 10 minutes. Plant shutdown (3) Incinerator is down. Plant is running.														
E-4003	Hot Oil Heater Stack		Nat. Gas												Stack Height = 50' Diameter = 1'2"
	Maximum	5.0		-	4500 / 3500	900	11.4	-	1.0	-	Negligible	-	Negligible	<5	
	Normal	2.0		-	1800 / 1400	900	11.4	-	0.4	-	Negligible	-	Negligible	<5	

RIO BLANCO OIL SHALE COMPANY
LURGI SURFACE RETORT DEMONSTRATION PLANT
TABLE I - SUPPORT FACILITIES EMISSION DATA

			Fuel		Emission			Pollutant Emission Rate - LB/HR							
Emission Source#	Description	Heat Duty 10^6 BTU/HR (Input)	Type	% Sulfur	Flow lb/hr / ACFM	Temp. °F	Press. PSIA	Particulate Matter	(As NO_2) NOx	SO_2	CO	H_2S	Hydrocarbons (excl. Methane	Opacity %	Remarks
	V. UTILITIES														
E-5001	2 steam boilers (max. capacity rate at, each, 73,500 lb/hr at 550 psig and 600 °F)														Common stack: Stack height = 100 Tip diameter (inter = 4'6"
	Maximum	99 each	Nat. gas	-	180,000 / 82,000	350	11.4	--	39.6	-	Negligible	-	Negligible	<5	Emission rates are based on 2 boilers (with common stack)
	Normal	27 each	Nat. gas	-	55,000 / 25,000	350	11.4	--	12.1	-	Negligible	-	Negligible	<5	
E-5002	Diesel electric generator (1000 kw)	12.0	Diesel	0.1	9,400 / 7,400	1000	11.4	3.0	41.5	1.2	9.0	-	4.0	<10	Emergency service; operates only duri blackouts. Stack height = 20' Tip diameter (inte =2'6"
E-5003	Diesel drive for fire water pump 200 hp)	1.8	Diesel	0.1	1,400 / 1,120	1000	11.4	0.5	6.2	0.2	1.4	-	0.6	<10	Emergency service; during fire only. Stack height = 20' Tip diameter (inte =1'6"
E-5004	Cooling tower														
	Maximum	30	N.A.	N.A.	1,470,000 / 448,000	90	11.4	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	Tower height appro 30 feet
	Normal	10	N.A.	N.A.	490,000 / 150,000	90	11.4	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	

RIO BLANCO OIL SHALE COMPANY
LURGI SURFACE RETORT DEMONSTRATION PLANT
TABLE I - SUPPORT FACILITIES EMISSION DATA

Emission Source#	Description	Heat Duty 10^6 BTU/HR (Input)	Fuel Type	Fuel % Sulfur	Emission Flow lb/hr ~~ACFM~~	Emission Temp. °F	Emission Press. PSIA	Pollutant Emission Rate - LB/HR Particulate Matter	(As NO_2) NOx	SO_2	CO	H_2S	Hydrocarbons (excl. Methane	Opacity %	Remarks
	VI. TANKAGE, TRUCK LOADING AND PRODUCT TRANSPORT														
E-6001	Product storage tank	N.A.	N.A.	N.A.	←	—	—	SEE TABLE II FOR INFORMATION						→	
E-6002	Product storage tank	N.A.	N.A.	N.A.	←	—	—	SEE TABLE II FOR INFORMATION						→	
E-6003	(Deleted)														
E-6004	(Deleted)														
E-6005	(Deleted)														
E-6006	Product oil loading station	N.A.	N.A.	N.A.	←	—	—	SEE TABLE II FOR INFORMATION						→	
E-6007	Diesel fuel storage tank	N.A.	N.A.	N.A.	←	—	—	SEE TABLE II FOR INFORMATION						→	
E-6008	Emerg. power diesel fuel tank	N.A.	N.A.	N.A.	←	—	—	SEE TABLE II FOR INFORMATION						→	
E-6009	Firewater diesel fuel tank	N.A.	N.A.	N.A.	←	—	—	SEE TABLE II FOR INFORMATION						→	
E-6010	Diesel fuel unloading station	N.A.	N.A.	N.A.	←	—	—	SEE TABLE II FOR INFORMATION						→	
E-6011	Gasoline Storage Tank	N.A.	N.A.	N.A.	←	—	—	SEE TABLE II FOR INFORMATION						→	
E-6012	Waste Oil Storage Tank	N.A.	N.A.	N.A.	←	—	—	SEE TABLE II FOR INFORMATION						→	
	VII Miscellaneous														
E-8001	Concrete Batch Plant	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	5 tons/year	--	--	--	--	--		Primarily cement dust particles

RIO BLANCO OIL SHALE COMPANY
LURGI SURFACE RETORT DEMONSTRATION PLANT
TABLE II-TANKAGE, TRUCK LOADING, AND PRODUCT TRANSPORT DATA

EMISSION SOURCE #	E-6001	E-6002	E-6003	E-6004	E-6005	E-6006	E-6007	E-6008	E-6009	E-6010	E-6011	E-6012
Equip./Facility Description	Product Storage Tank	Product Storage Tank	(deleted)	(Deleted)	(Deleted)	Product Oil oading Sta - tion	Diesel Fuel Storage Tank Emerg. Power	Emerg. Power Diesel Fuel Day Tank	Firewater Diesel Fuel Day Tank	Diesel Fuel Unloading Station	Gasoline Storage Tank	Waste Oil Storage Tank
Content	Retort Oil	Retort Oil				Retort Oil	Diesel Fuel	Diesel Fuel	Diesel Fuel	Diesel Fuel	Gasoline	Waste Oils
Type	Floating Roof	Floating Roof				-	Cone Roof	Underground Horiz. FRP	Underground Horiz. FRP	-	Underground horizontal FRP	Floating Roof
Capacity, Barrels	45,000	45,000				-	572	4,000Gallons	2,000Gallons	-	143	238
Barometric Press. PSIA	11.4	11.4				-	11.4	11.4	11.4	-	11.4	11.4
Vapor Pressure, PSIA	0.5 max at 140°F (kept heated)	0.5 max at 140°F (kept heated)				-	0.5 max	0.5 max	0.5 max	-	0.5 max.	Varied (kept heated)
Height, Feet	48	48				-	20	19'-10"	10'-10"	-	18'-9"	12
D, Feet	82	82				-	15	6'-6"	6'-6"	-	8	12
H, Feet	24	24				-	18	6	6	-	7'-6"	6
T, °F	100	100				-	Refer to Legend	Refer to Legend	Refer to Legend	-	Refer to Legend	100
K_c	As for crude oil	As for crude oil				-	-	-	-	-	-	-
F_p	Insulated	Insulated				-	For alum. paint (no insulation)	-	-	-	-	Insulated
C	1.0	1.0				-	0.4	0.4	0.4	-	0.4	0.4
K_T	1 (6 tank vol./year)	1 (6 tank vol./year)				-	1 (5 tank vol./year)	1 (2 tank vol./year)	1 (2 tank vol./year)	-	1 (12 tank vol./year)	Varied
V, Barrels/year	270,000	270,000				-	2857	190	95	-	1667	-
With/Without Mixing	With mixing	With mixing				-	Without Mixing	Without Mixing	Without Mixing	-	Without Mixing	Without Mixing
Truck Delivery, Gallons/Truck	-	-				5,000	-	-	-	5,000	-	-
Truck Pump Capacity, GPM	-	-				600	-	-	-	200	-	-
Max. No. of Trucks/Week	-	-				84	-	-	-	1	-	-
Mode of Loading Operation	Submerged	Submerged				Submerged	Submerged	Submerged	Submerged	Submerged	Submerged	Submerged
Remarks	-	-				Based on 60% plant operating factor	-	-	-	-	-	-

LEGEND : (Per API Bulletin No. 2518)

K_c = Constant for crude oil
D = tank diameter
H = Average outage including a correction for roof volume
T = Average daily ambient temperature range
F_p = Paint factor
C = Adjustment factor for small tanks (C is unity for tanks

Rio Blanco Oil Shale Company
2851 South Parker Road Suite 500
Aurora, Colorado 80014 (303) 695-2400

January 22, 1981

Mr. John Plog
Colorado Department of Health
Air Pollution Control Division
4210 E. 11th Avenue
Denver, CO 80220

Dear Mr. Plog:

We would like to thank you for meeting with us on January 12, 1981 to discuss Rio Blanco Oil Shale Company's CDOH air pollutant emission permit applications for the proposed Lurgi Demonstration Project. This letter is written to provide additional information related to these permit applications.

Information on the following subject are included:

- A cross reference index identifying sections of the PSD application and Lurgi Demonstration Project Report applicable to each permit application (Attachment 1)
- Additional information on the proposed project schedule (Attachment 2)
- Data on projected H_2S emissions resulting from the Lurgi Demonstration Project (Attachment 3)
- Estimated SO_2 emission from the Lurgi unit and support facilities in lbs/barrel (Attachment 4)
- Estimated emissions from hydrocarbon storage tanks (Attachment 5)
- Support Information used by ERT in preparing the emission inventory for fugitive dust (Attachment 6)
- Fuel specifications for #1 and #2 diesel fuel and natural gas used on tract (Attachment 7)
- Typical cross sections for the haul road, access road and BLM roads (Attachment 8)

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- Additional air pollutant emission application for seven (7) petroleum storage tanks and two (2) petroleum transfer facilities (Attachment 9). A check for $360 is attached to cover the Application filing fee for these nine additional sources.

- Detailed plot plans showing areas to be disturbed by year (Attachment 10)

- Drawing of the pit progression by year (Attachment 11)

- An additional copy of the Emission Plot Plan (Attachment 12)

As discussed in the meeting among RBOSC personnel and you on January 12, 1981, RBOSC is not planning to submit a permit application for the emergency flare because it will only be used for upset conditions. Further discussions with RBOSC process engineers have confirmed that the flare will not be used on a scheduled basis for maintenance of the incinerator/scrubber or during normal startup or shutdown procedures. If, for some reason, the incinerator becomes inoperative during the retorting process, the retort will be shutdown. It is anticipated that during Phase I of the project, the operating factor will be approximately 50%. Any maintenance requirements for the incinerator/scrubber can be scheduled during periods of plant shutdown.

You suggested in our meeting that it may be advantageous to obtain separate fugitive dust permits for the various construction related activities. RBOSC has given this consideration but has decided that there is little advantage for us because these activities are so closely interrelated.

For instance, we could not begin construction of the haul road prior to obtaining the permits for the open pit mine because overburden material from the mine will be used as fill for the haul road. If your review of the applications would be facilitated by our submittal of separate permits, however, we will do so.

Please call if you have questions or need additional information.

Sincerely,

James W. Ericson
Environmental Coordinator

JWE:mjr

Attachments

ATTACHMENT 1

ADDITIONAL SOURCES OF INFORMATION FOR THE CDOH AIR POLLUTANT EMISSION PERMIT APPLICATIONS

1. Permit Application	Lurgi Demonstration Project Report	PSD Application	CDOH Appendices
Construction Fugitive Dust Emissions	Sec. 7, Ch. 5 - Air Quality Control Sec. 9, Ch. 2 - Air Quality Monitoring Studies Sec. 2, Ch. 6 - Open Pit Design Sec. 5, Ch. 3 - Overburden Disposal Operations	Sec. 2, Lurgi Project Description Sec. 4, Part 4.1.2, Fugitive Dust Emissions Sec. 9, BACT Sec. 6, pg. 105-109 (CAAQS) Appendix B - Emission Calculations	
Concrete Batch Plant Emissions	Sec. 7, Ch. 5 (pg. 7-5-4)	Sec. 4, Table 4-2 - 4-4 (Emission Inventory) Appendix B - 1981-1982 (Emission Calculations)	
Operations Fugitive Dust Emissions	Sec. 7, Ch. 5 - Air Quality Control Sec. 3 - Retort Feed Preparation Sec. 5 - Processed Shale and Overburden Disposal Sec. 9, Ch. 2 - Air Quality Monitoring	Sec. 2, Lurgi Project Description Sec. 4, Tables 4-2 - 4-6 (Emission Inventory) Appendix B - Emissions Calculations Sec. 6, pg. 105-109 (CAAQS) Sec. 9, BACT	
Incinerator/Scrubber Emissions	Sec. 4 - Lurgi Processing (pg. 4-3-23 and 24) Sec. 7, Ch. 5 - Table 7-5-5	Sec. 4, Table 4-1 Lurgi & MIS Operational Parameters Sec. 5 - Stack modeling Sec. 6 - (NAAQS & CAAQS) Sec. 9, BACT Appendix A - model description	Technical Report 100 - Capabilities Statement SO_2 Control System
Emergency Generator	Sec. 7, Ch. 5 - Air Quality Control (Table 7-5-14) Sec. 4, Ch. 3 (pg. 4-3-19)		Emission Plot Plan and d Inventory
Lurgi Flue Stack	Sec. 4, Ch. 3, Lurgi Processing Operations Sec. 7, Ch. 5 - Air Quality Control (pg. 7-5-6 to 13)	Sec. 4, Table 4-1 (Lurgi & MIS Operational Parameters) Sec. 5 - Stack modeling Sec. 9, BACT Appendix A - model descriptions	Emission Plot Plan and Inventory
Steam Generator Emissions	Sec. 4, Ch. 3, Lurgi Processing Operations (pg. 4-3-18)	Sec. 4, Table 4-1 (Lurgi Operational Parameters)	Emission Plot Plan and Inventory

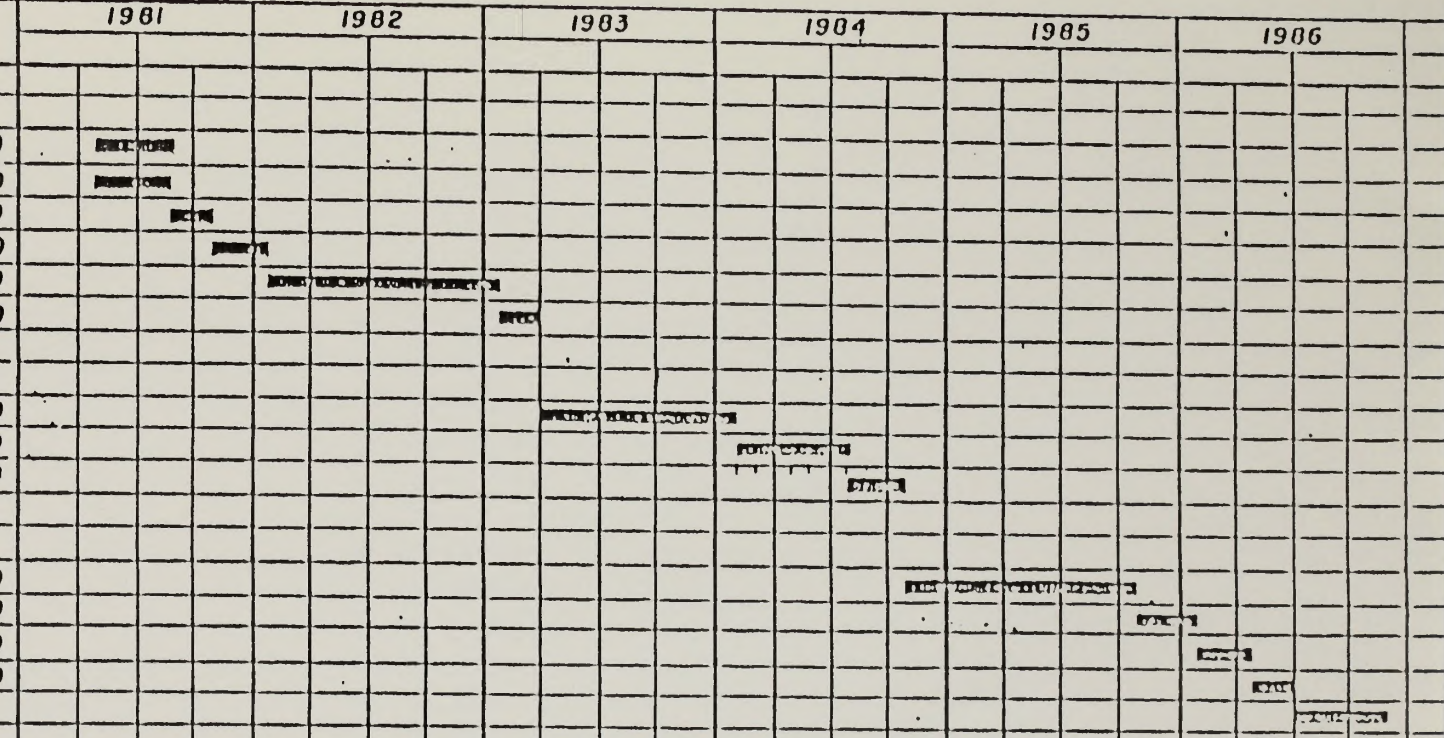
ADDITIONAL SOURCES OF INFORMATION FOR THE CDOH AIR POLLUTANT EMISSION PERMIT APPLICATIONS
(continued)

	Lurgi Demonstration Project Report	PSD Application	CDOH Appendices
Crushing Operations Emissions	Sec. 3 - Retort Feed Preparation Sec. 7, Ch. 5 - Air Quality Control (pg. 7-5-5 and 6)	Sec. 4, Tables 4-5 & 4-6 (Emission Inventory) Sec. 9, BACT (pg. 127-129) Appendix B - Emission Inventory (1983 & 1984)	Emission Plot Plan and Inventory
Oil Storage Tank Emissions	Sec. 7, Ch. 5 (pg. 7-5-15)	Sec. 4, Table 4-7, Hydrocarbon Emissions Appendix C, HC Emission Calculations	
Hot Oil Heat	Sec. 7, Ch. 5 (pg. 7-5-14)	Sec. 4, Table 4-1 (Lurgi & MIS Operational Parameters)	Emission Plot Plan and Inventory

ATTACHMENT 2

RIO BLANCO OIL SHALE COMPANY
EARTHMOVING SCHEDULE

DESCRIPTION	BCY
PHASE I	
SHOP/OFFICE FILL (SCRAPER)	222,000
ACCESS ROAD FILL (SCRAPER)	149,000
HAUL ROAD FILL (T-S)	637,000
ADJ. HAUL ROAD FILL (T-S)	732,000
CONTAINMENT DIKE FILL (T-S)	3,516,000
OIL SHALE	657,500
PHASE II	
EAST GULCH FILL (T-S)	2,434,000
CONTAINMENT DIKE FILL (T-S)	1,714,000
OIL SHALE	986,100
RECLAMATION	LCY
EAST GULCH FILL (T-S)	3,286,000
HAUL ROAD FILL (T-S)	860,000
ADJ. HAUL ROAD FILL (T-S)	988,000
SHOP/OFFICE FILL (SCRAPER)	300,000
FINAL SLOPES-FINAL TOPSOILING	
CONSTRUCTION EXCAV.*	
HAUL ROAD CUT	500,000
LURGI SITE CUT-FILL EXCESS	135,000



* CONSTRUCTION EXCAVATION TO CONTAINMENT DIKE FILL

ATTACHMENT 3

Emission of H_2S from Lurgi Demonstration Project Facilities

The product gas from the Lurgi condensation unit (see Figure 4-3-5 in the Lurgi Demonstration Project Report) will contain approximately 3860 ppm (vol) H_2S. A portion of this gas will be used in the Lurgi retort unit as fuel. The excess, approximately 70×10^6 Btu/hr will be sent to the incinerator.

The combustion temperature in the refractory lined incinerator will be kept at an operating temperature of approximately 1700°F, which in the presence of excess oxygen, will result in the complete conversion of H_2S and other reduced sulfur compounds to SO_2.

After complete combustion, the flue gas will enter a variable throat venturi scrubber as described in the supplementary information included in the application.

In case of an emergency (incinerator shutdown) the excess product gas will be flared. No emissions of H_2S are anticipated from the Lurgi retort because of the high operating temperature (approximately 1240°) the presence of excess oxygen in the combustion process, and the natural sulfur scrubbing characteristics of the Lurgi unit when retorting Piceance Basin oil shale (see Sec. 7, Ch. 5.4, Lurgi Demonstration Project Report).

No H_2S emission will occur from the steam boilers or hot oil heater because these units are natural gas-fired or from the emergency generator because it is diesel powered.

Product oil from the retorting process will contain reduced sulfur compounds. The product oil transport and processing system will be totally enclosed and the product oil storage tanks will have floating roofs.

Based on present design and operating criteria for the Lurgi unit and support facilities, ambient concentrations of H_2S should be significantly below the 0.10 ppm standard. Data on the emission of other potentially hazardous air pollutants listed in Regulation No. 8 are addressed in Section 10 of the PSD permit application.

ATTACHMENT 4

New Source Emission Control Regulations

The Sulfur Dioxide Emission Regulations for Oil Shale (Sec. III B,f.) state that SO_2 emission must not exceed 0.3 lbs of SO_2 per barrel of oil produced for facilities producing 1,000 or more barrels per day.

Calculation of SO_2 emissions for the Lurgi retort and support facilities are shown below:

1. SO_2 emission from the Lurgi flue stack = 18 lb/hr

2. SO_2 emission from the product gas incinerator = 9.7 lb/hr

3. Raw shale oil production rate = 2,230 barrels/stream day (pg. 4-3-10 of the DDP)

$$\frac{(18 \text{ lb/hr } SO_2 + 9.7 \text{ lb/hr } SO_2)(24 \text{ hr/day})}{2{,}230 \text{ barrels/day}} = 0.298 \text{ lb } SO_2/\text{barrel}$$

Originally, the SO_2 emissions from the incinerator scrubber were estimated at 10.6 lb/hr (pg. 7-5-14 of DDP Report). However, planned operational considerations such as using more caustic should improve scrubbing efficiency so that average emissions of 9.7 lb/hr or less of SO_2 from the incinerator flue stack can be achieved. If higher SO_2 removal efficiency is necessary, other measures such as installing additional trays in the scrubber will be considered.

It should be pointed out that emissions of SO_2/barrel of oil from a commercial operation would be considerably lower because the product gas would be utilized as a fuel source and, thus, would not be incinerated, and naptha produced in the retorting process would be recovered. For the demonstration facility, it is not feasible to recover the naptha produced or to use all of the product gas generated.

ATTACHMENT 5

Hydrocarbon Emissions

Regulation No. 7, Sec II, D.2. of the Colorado Air Quality Control Regulations states that emissions from any point source or process can not exceed 204 kg/hr (450 lb/hr) or more than 1361 kg/hr (3000 lb/hr). Total estimated Hydrocarbon emissions (See Table 4-7 and Appendix C of the PSD application) are estimated to be 2.3 kg/hr (5.0 lb/hr) or 55 kg/day (119 lb/day).

Average Haul Distance/Quantities

Area	Yardage (BCY)	Dist (Ft)
Main Pit Topsoil (Phase I & 2)	48,500[1]	1,900
'East Gulch' Topsoil	90,900	1,700
Lower Haul Road Area Topsoil	153,200	1,700
Upper Haul Raod Area Topsoil	89,800	2,200
Shop/Office Access Road Topsoil	71,000	2,100
Lurgi Access Road Topsoil	19,300	4,300
Settling Pond Topsoil	19,000[2]	200
Main Pit/'East Gulch' Topsoil Stockpile Topsoil	14,100	400
Powder House Topsoil	3,200	3,100
Powder House Access Road Topsoil	13,600	1,500
Overburden to Adjacent Haul Road Fill	685,800	3,200
Overburden to Haul Road Area	637,000	3,600
Overburden to Off-Tract Fill	5,061,500	9,300
Overburden to 'East Gulch' Fill	2,648,100	4,600
Overburden to Shop/Office Fill	222,200	1,900
Overburden to Access Road Fill	149,300	6,300
Haul Road cut to Off-Tract Fill	500,000	3,700
Settling Pond Material	100,000[2]	200
Shale Stockpile Cut to Off-Tract	138,500	2,300
'East Gulch; Fill to Final Rec.	3,574,900	4,600
Adjacent Haul Road Fill to Final Rec.	925,800	3,200
Haul Road/Shop Area Fill to Final Rec.	1,052,000	3,600
Oil Shale (Pit to Stockpile)	1,643,800	7,800

1 Haulage will be twice amount shown if reclamation is considered

2 Estimated Figures

Volumes in Stockpiles (BCY) (Through Quantities)

Area	B.C.Y
Main Pit/'East Gulch' Topsoil	153,500
Lower Haul Road Area Topsoil	79,800
Upper Haul Road/Shale Stockpile Area Topsoil	89,800
Shop/Office Access Road Topsoil	90,300
Settling Pond Topsoil	19,000 *
Shop Area Topsoil	90,200
'East Gulch' Overburden	2,648,100
Off-Tract Overburden	5,700,000
Adjacent Haul Road Fill Area	685,800
Haul road Fill	786,300
Shop/Office Fill Area	222,200
Oil Shale Stockpiles (1 & 2)	1,643,800
Settling Pond Embankments	100,000 *

* Estimated Figures

Equipment List During Construction Phase

May 1, 1981, to September 1, 1981

Type	Number	Days/Year	Shifts/Day
(Clear & Grub, Topsoil, Site Prep)			
Dozer, 300 HP	3	87	2
Scraper, 28 C.Y.	4	87	2
Rubber Tired Dozer, 310 HP	1	87	2
Compactor	1	87	2
Water Truck 3,000 Gal.	2	87	2
Motor Grader, 135 HP	2	87	2
Mechanic Truck	1	87	2
Weld Truck	1	87	2
Fuel/Lube Truck	1	87	2
(Construction Equip. Major Item)			
Crane 25 Ton	1	87	1
Crane 15 Ton	1	87	1
Semi-Tractor Truck (Towing)	1	87	1
Semi-Truck - Lowboy	1	87	1
Tractor Backhoe	1	87	1
Flatbed Truck	4	87	1
Weld Truck	2	87	1
Mechanic Truck	2	87	1
Fuel/Lube Truck	1	87	1

Equipment List During Stripping and Mining Operation

September 1, 1981 to November 23, 1984

Type	Number	Days/Year	Shifts/Day
Front End Shovel (12 CY)	1	250	2
85 Ton End Dump Trucks	8	250	2
300 HP Dozer	2	250	2
Motor Grader, 250 HP	2	250	2
Water Truck - 10,000 Gal	2	250	2
Water Truck - 3,300 Gal	1	250	2
Rotary Drill	1	250	2
ANFO Truck - 10 Ton	1	250	2
Powder Truck - 1 Ton	1	250	2
Gel Truck - 1 Ton	1	250	2
Backhoe Crawler	1	250	2
Compactor	1	250	2
Front End Loader (12 CY)	1	250 *	2 *
6" Cent. Pump - Diesel	1	250 (91 Week)	3
6" Cent. Pump - Electric	2	250 (Total)	3
Front End Loader - (12 CY)	1	65 Total	2
85 Ton End Dump Trucks	4	65 Total	2

* Backup for F.E. Shovel Only

Equipment List During Reclamation

November 23, 1984 to July 1, 1986[1]

Type	Number	Days/Year	Shifts/Day
Backfilling and Grading			
Front End Shovel - 12 CY	1	250	2
85 Ton End Dump Truck	8	250	2
Dozer - 300 HP	2	250	2
Motor Grader -135 HP	2	250	2
Water Truck - 10,000 Gal	2	250	2
Water Truck - 3,300 Gal	1	250	2
Compactor	1	250	2
Front End Loader - 12 CY	1	250 *	2 *
Topsoil and Seeding			
Dozer - 300 HP	2	80 +	
Motor Scraper - 28 CY	4	80	1
Wheel Dozer - 310 HP	1	80	1
Compactor	1	80	1
Water Truck - 3,300 Gal	2	80	1
Motor Grader - 135 HP	2	80	1
Farm Tractor	1	80	1
Broadcast Drill Seeder	1	80	1
Fertilizer Spreader	1	80	1
Mulching Machine Crimper	1	80	1
Subsoil Plow	1	80	1
Disc	1	80	1
Harrow	1	80	1

* Backup for F.E. Shovel Only

+ Conducted 2 Months Spring
2 Months Fall

[1] Final topsoiling and seeding complete November 1, 1986

Topsoil Removal

- Volume to be removed: ~1,000,000 bcy
- Equipment operation: See Table

Topsoil Stockpile

- See enclosed plot plan for horizontal area and height of the stockpile
- 3h:1v sideslopes
- Soil classification: refer to Dave Boyce, Rio Blanco Oil Shale Company
- Dust control: rapid revegetation

Drilling

- 675 holes per month (32 holes/day)
- Dust control: standard equipment cyclone collector

Blasting

- 17 blasts/month (blasts/day N.A.)

Overburden Removal

Type	Number
12 C.Y. hydraulic shovel	1
12 C.Y. front end loader	1
85 ton end dump trucks	13
300 HP dozers	2
250 HP motor graders	2
10,000 gal water truck	2
3,300 gal water truck	1

Rate: 678 BCY/hr

10 hrs/shift, 2 shifts/day, 5 days/week

Overburden Stockpile

- Note enclosed plot plan for horizontal area and height of the stockpile
- 3h:1v sideslopes
- Soil classification: sedimentary rock, primarily marlstone

Shale Removal

- Same as overburden removal except nine end dump

trucks instead of 13.

Open Pit

- Note enclosed pit plans

Shale Dumping

- End-dump
- Maximum tons/day = 24,750 tons
- Maximum tons/year = 1,800,000 tons
- Dust control: none

Raw Shale Stockpile

- Note enclosed plot plan for horizontal areas and heights of stockpiles
- Angle of repose: 2h:1v
- Volume of stockpile: 1,800,000 tons

JAN 19 1981

ATTACHMENT 7

RIO BLANCO OIL SHALE COMPANY
ENVIRONMENTAL AFFAIRS DEPARTMENT
DENVER, COLORADO

Date: January 6

To: J. W. Ericson

From: J. V. Liberatore

Subject: Fuel Specifications

Per your request the specifications of the fuel used on tract is as listed below:

Fuel Grade: ASTM D 396 (Grade)	1-D	2-D
Gravity °API	42.0	34.5
Flash °F	125	140
Viscosity, @ 100 F	1.60cs	34.7ssu
Cloud Point °F	-50	10
Pour Point °F	-55	0-15
Sulfur %	0.02	0.03
Distillation, °F (Recovered):		
IBP	330	370
10%	362	432
50%	410	510
EP	510	635
Cetane Index	43-47	45-50
BTU/Lb	19,810	19,560
BTU/Gal (Gross)	134,510	139,270
BTU/Gal (Net)	126,200	130,900
% Ash	none	none
S.G.=	0.8156	0.8550
ρ =	6.79 lb/gal	7.12 lb/gal

Natural Gas:

1106 BTU/ft^3 (@14.65 psi dry)

S.G. = 0.652

0.87% CO_2

0.04% O_2

2.02% N

January 6, 1981

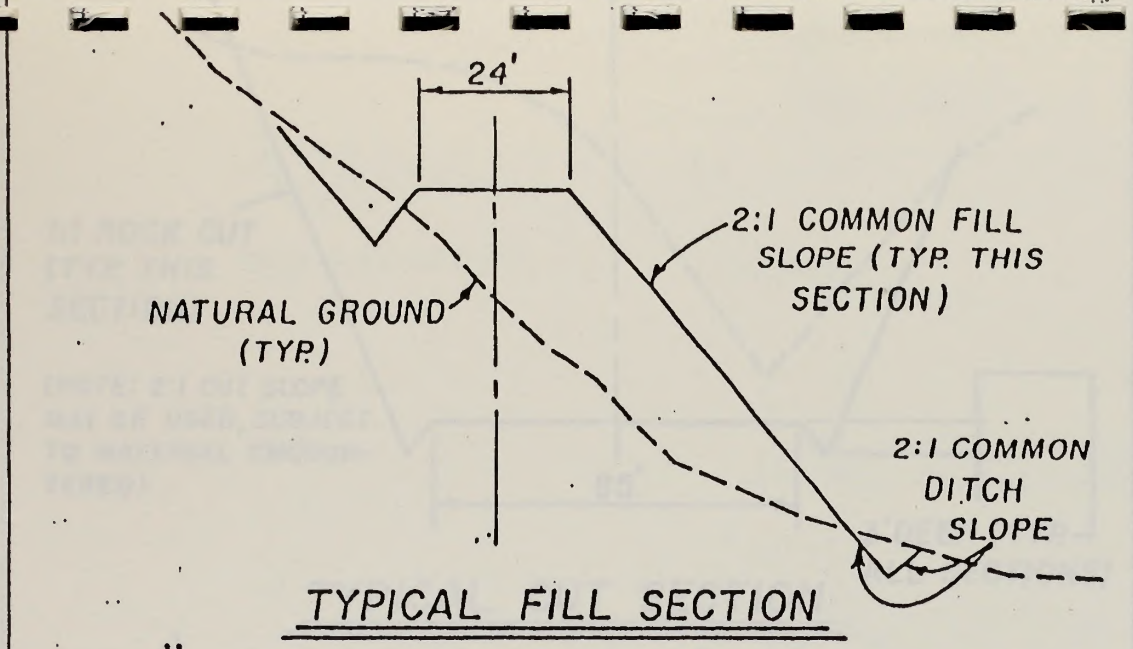
Natural Gas: (continued)

85.99% CH_4
6.63% Ethane
2.87% Propane
0.5% Isobutane
0.78% Butane
0.13% Isopentane
0.08% Pentane
0.09% Hexane
No Sulfur
No Ash

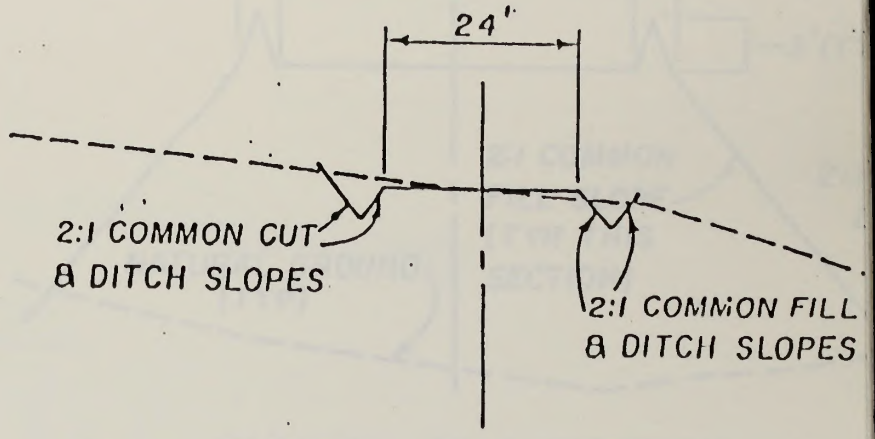
J. V. Liberatore

JVL/clc

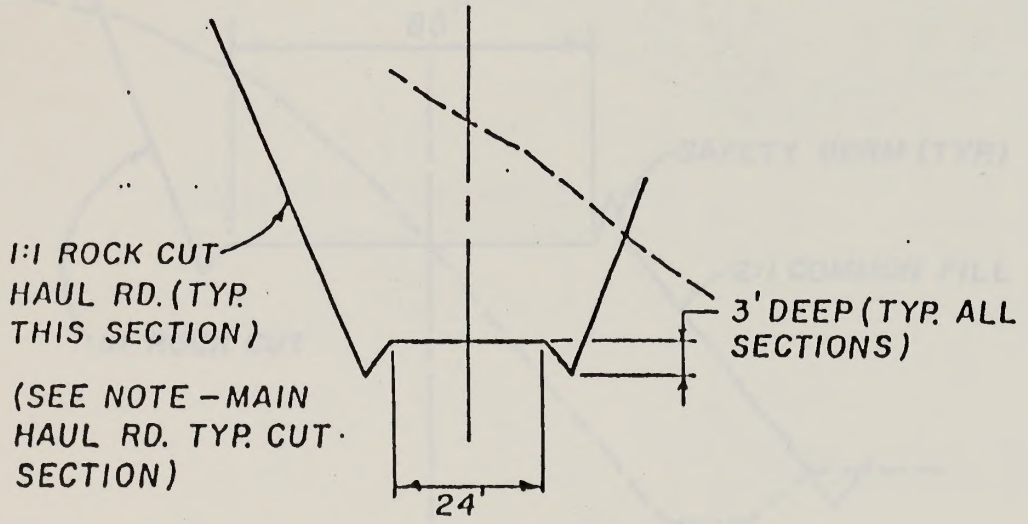
xc: File: 24-3
File: 24-4



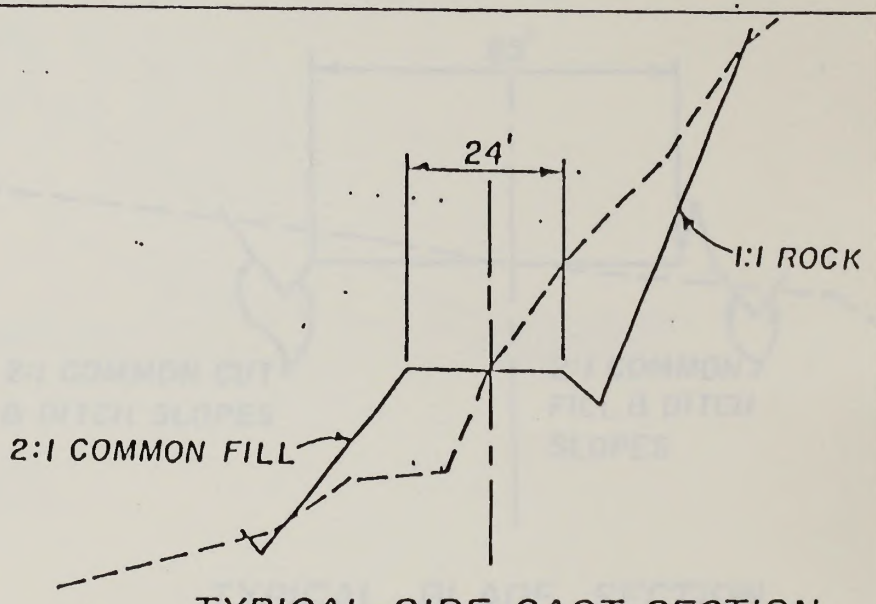
TYPICAL FILL SECTION



TYPICAL BLADE SECTION



TYPICAL CUT SECTION

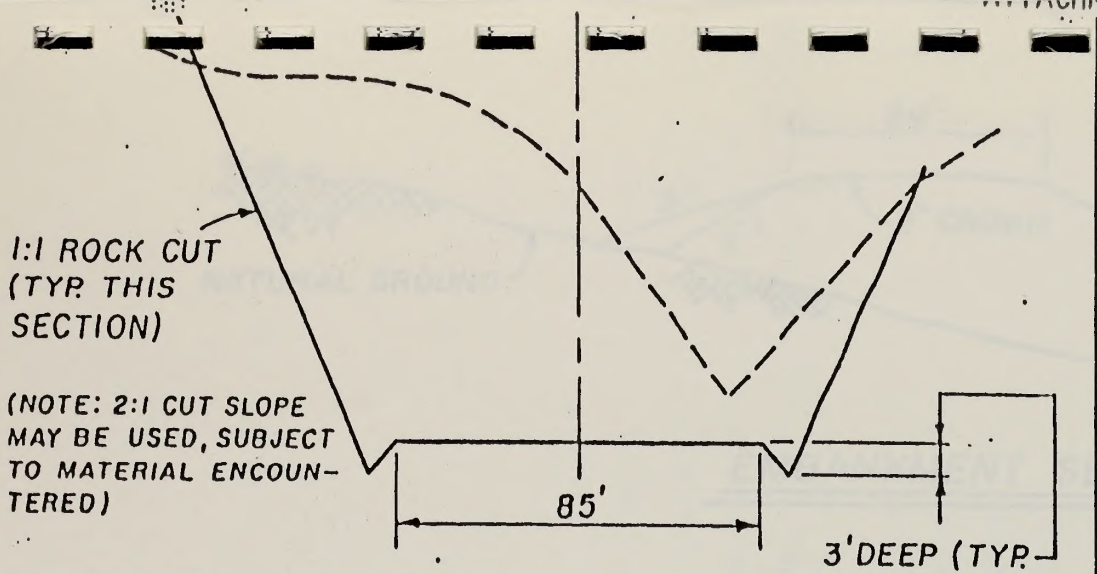


TYPICAL SIDE-CAST SECTION

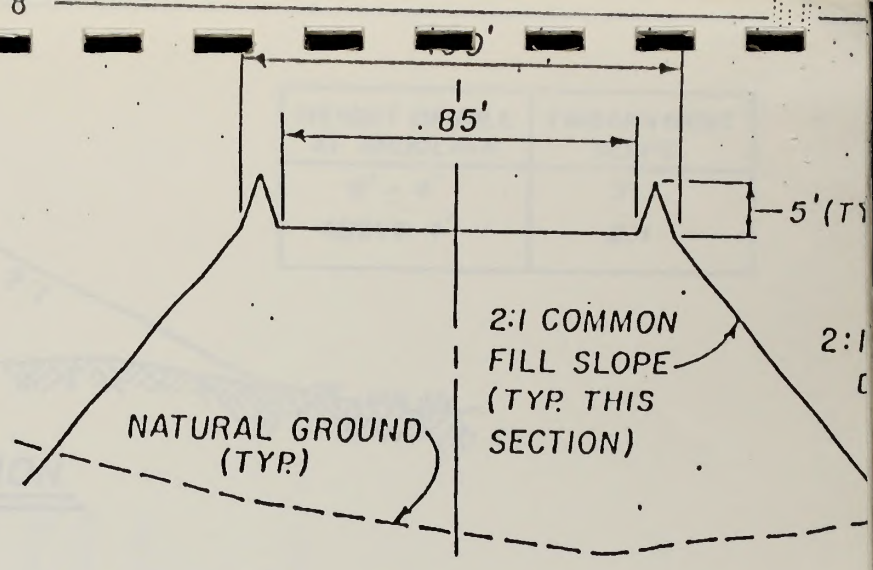
FIGURE D-8

TYPICAL ACCESS ROAD CROSS-SECTIONS

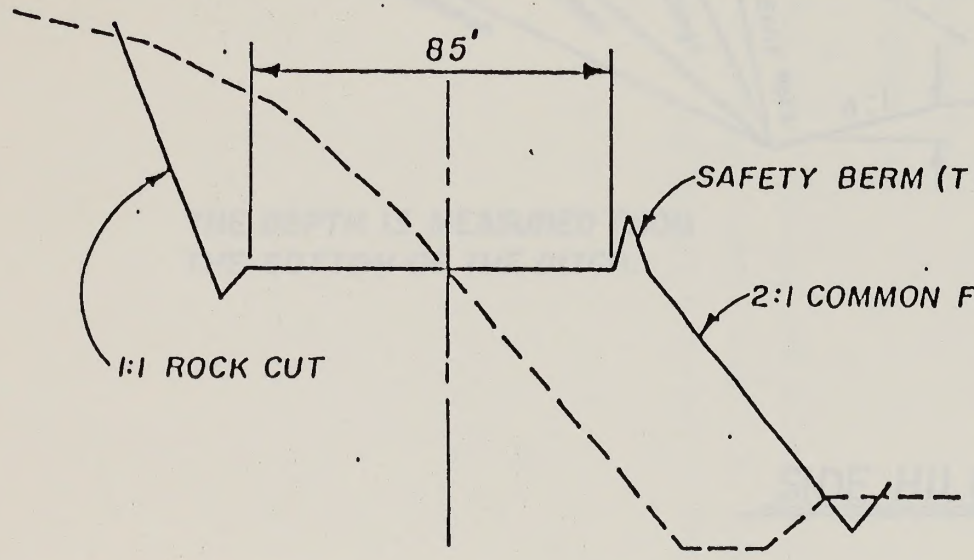
1" = 20' VERT. 1" = 50' HORZ.



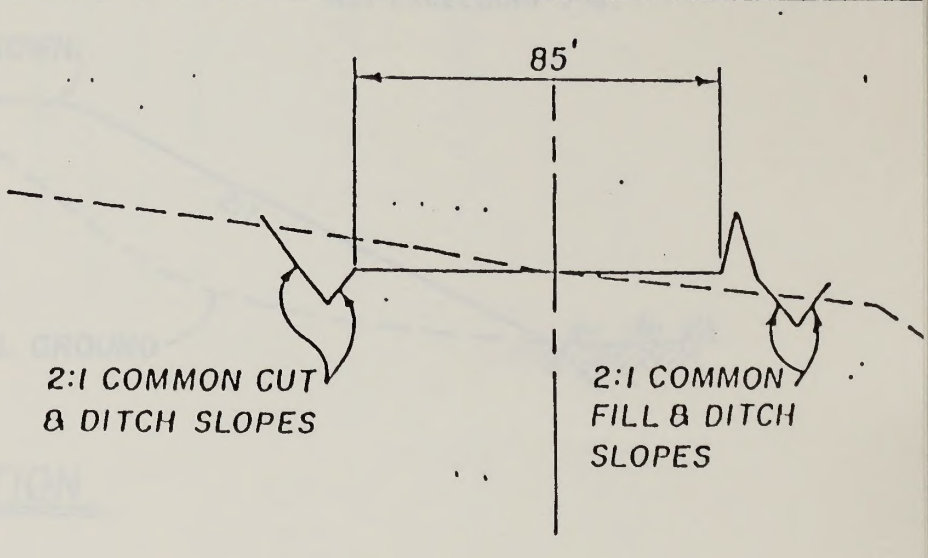
TYPICAL CUT SECTION



TYPICAL FILL SECTION



TYPICAL SIDE-CAST SECTION

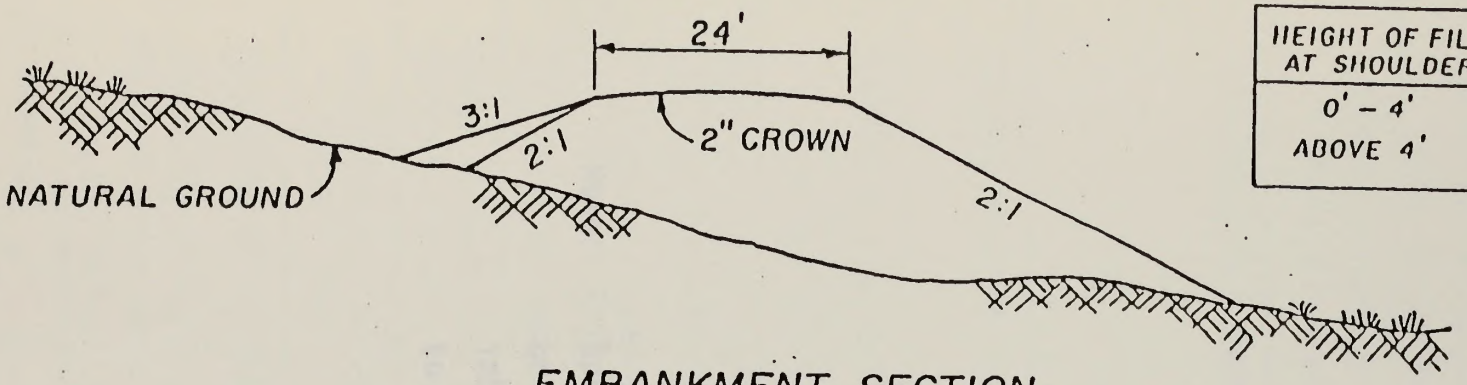


TYPICAL BLADE SECTION

FIGURE D-7

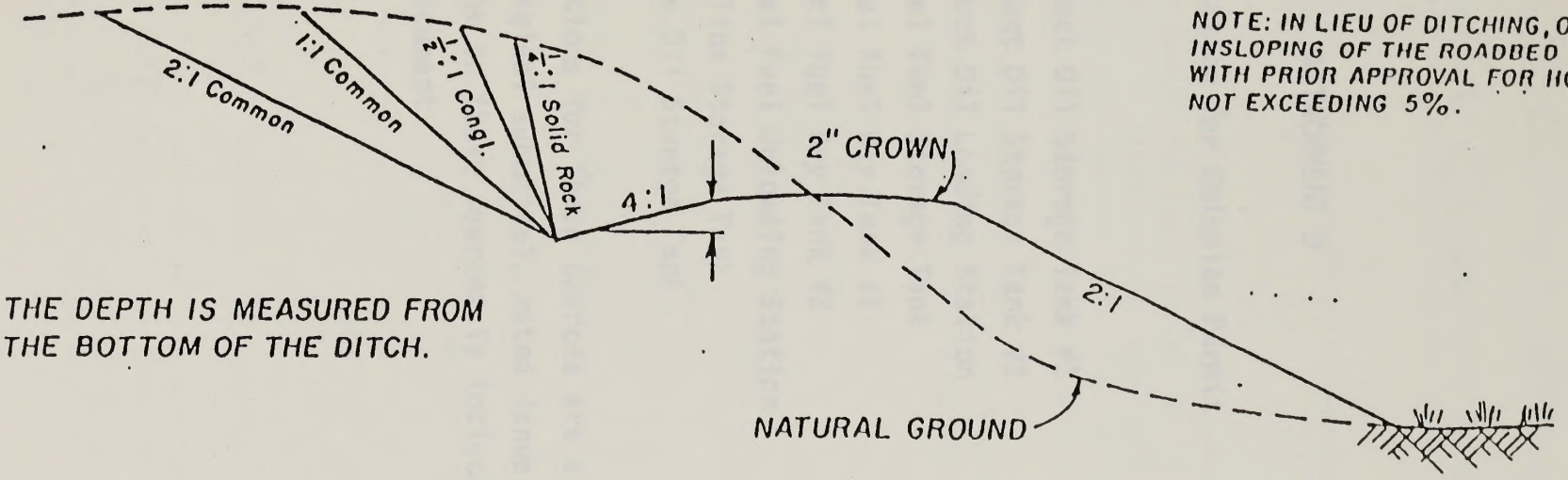
TYPICAL HAUL ROAD CROSS-SECTIONS

1" = 20' VERT. 1" = 50' HORZ.



HEIGHT OF FILL AT SHOULDER	EMBANKMENT SLOPE
0' – 4'	3:1
ABOVE 4'	2:1

EMBANKMENT SECTION



THE DEPTH IS MEASURED FROM THE BOTTOM OF THE DITCH.

NOTE: IN LIEU OF DITCHING, OUTSLOPING OR INSLOPING OF THE ROADBED MAY BE ALLOW WITH PRIOR APPROVAL FOR HORIZONTAL GR NOT EXCEEDING 5%.

SIDE HILL SECTION

FIGURE D-9
TYPICAL BLM ROAD SECTIONS

ATTACHMENT 9

Application for Emission Permit

Product Oil Storage Tank #1
Product Oil Storage Tank #2
Product Oil Loading Station
Diesel Fuel Storage Tank
Diesel Fuel Day Tank #1
Diesel Fuel Day Tank #2
Diesel Fuel Unloading Station
Gasoline Storage Tank
Waste Oil Storage Tank

Note: Specifications for these sources are shown on pages 31-39 of the original submittal, dated January 9, 1981. Additional information on these sources is included in the Appendix to that document.

1. PERMIT TO BE ISSUED TO: RIO BLANCO OIL SHALE COMPANY — Telephone No. (303) 695-2400

2. MAILING ADDRESS (include zip code):
2851 South Parker Road, Aurora, Colorado 80014

3. TYPE OF ORGANIZATION:
/ / Corporation /XX/ Partnership / / Individual Owner / / Governmental Agency

4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):

Product oil storage tank #1

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment _____ Process Equipment _____
Days Per Year Source Will Be Operated 365

9. STATUS (check and complete applicable items):

	Estimated Date Construction Will Begin	Estimated Date Construction Will Be Completed
/X/ New Air Pollutant Source		
/ / Control Equipment Being Added to Existing Source		
/ / Activity Change	Oct. 81	Jan. 83

10. Check is enclosed to cover APPLICATION FILING FEE /XX/ $40.00
(see No. 10 on reverse side of this form)

11. ANTICIPATED START-UP DATE
January 1983

12. DATE OF APPLICATION
January 9, 1981

13. SIGNATURE OF LEGALLY AUTHORIZED PERSON

J. Blaine Miller

14. Type or print name and official title of person signing this application.
J. Blaine Miller, President, Rio Blanco Oil Shale Company

Date Received

15. REMARKS:

CD 200C (REV. 3/80)

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/ / Corporation /yy/ Partnership / / Individual Owner / / Governmental Agency

4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):

Product oil storage tank #2

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment _____ Process Equipment _____
Days Per Year Source Will Be Operated 365

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4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):

Product oil loading station

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment _____ Process Equipment _____
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January 1983

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January 9, 1981

13. SIGNATURE OF LEGALLY AUTHORIZED PERSON
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J. Blaine Miller, President, Rio Blanco Oil Shale Company

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4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):

Diesel fuel storage tank

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment _____ Process Equipment _____
Days Per Year Source Will Be Operated 365

9. STATUS (check and complete applicable items):

	Estimated Date Construction Will Begin	Estimated Date Construction Will Be Completed
/X/ New Air Pollutant Source		
/ / Control Equipment Being Added to Existing Source		
/ / Activity Change	May 81	Sept. 81

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4. AGENT FOR SERVICE:
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5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):

Diesel Fuel day tank #1

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment _____ Process Equipment _____
Days Per Year Source Will Be Operated 365

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4. AGENT FOR SERVICE:
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5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):

Diesel fuel day tank #2

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment _____ Process Equipment _____
Days Per Year Source Will Be Operated 365

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3. TYPE OF ORGANIZATION:
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4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):

Diesel fuel unloading station

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment _____ Process Equipment _____
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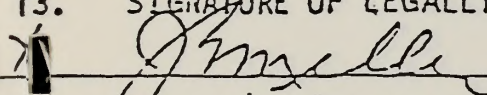
X 

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3. TYPE OF ORGANIZATION:
/ / Corporation /yy/ Partnership / / Individual Owner / / Governmental Agency

4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):

Gasoline storage tank

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment _____ Process Equipment _____
Days Per Year Source Will Be Operated 365

9. STATUS (check and complete applicable items):

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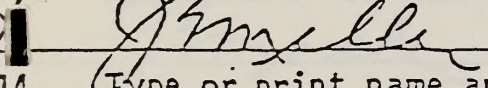

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2. MAILING ADDRESS (include zip code):
2851 South Parker Road, Aurora, Colorado 80014

3. TYPE OF ORGANIZATION:
/ / Corporation /yy/ Partnership / / Individual Owner / / Governmental Agency

4. AGENT FOR SERVICE:
James W. Ericson

5. GENERAL NATURE OF BUSINESS:
Shale Oil Production

6. AIR POLLUTION SOURCE: Pursuant to Regulation No. 3 of the Colorado Air Quality Control Commission, application is hereby made for an Emission Permit for the following air pollution source (attach separate sheet where necessary):

Waste oil storage Tank

7. SOURCE LOCATION ADDRESS: Rio Blanco Oil Shale Company, Piceance Creek Route, Rifle, CO 81650
COUNTY(IES): Rio Blanco

8. ESTIMATED COST OF SOURCE OR MODIFICATIONS:
Air Pollution Control Equipment _____ Process Equipment _____
Days Per Year Source Will Be Operated 365

9. STATUS (check and complete applicable items):

	Estimated Date Construction Will Begin	Estimated Date Construction Will Be Completed
/X/ New Air Pollutant Source		
/ / Control Equipment Being Added to Existing Source		
/ / Activity Change	May 81	Sept. 81

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J. Blaine Miller, President, Rio Blanco Oil Shale Company

Date Received

15. REMARKS:

CD 200C (REV. 3/80)

ATTACHMENT 10

Areas Disturbed by Year

1981

1982

1983

ATTACHMENT 11

Open Pit Progression

ATTACHMENT 12

Emission Plot Plan

ATTACHMENT 4

New Source Emission Control Regulations

The Sulfur Dioxide Emission Regulations for Oil Shale (Sec. III B,f.) state that SO_2 emission must not exceed 0.3 lbs of SO_2 per barrel of oil produced for facilities producing 1,000 or more barrels per day.

Calculation of SO_2 emissions for the Lurgi retort and support facilities are shown below:

1. SO_2 emission from the Lurgi flue stack = 18 lb/hr

2. SO_2 emission from the product gas incinerator = 9.7 lb/hr

3. Raw shale oil production rate = 2,230 barrels/stream day (pg. 4-3-10 of the DDP)

$$\frac{(18 \text{ lb/hr } SO_2 + 9.7 \text{ lb/hr } SO_2)(24 \text{ hr/day})}{2{,}230 \text{ barrels/day}} = 0.298 \text{ lb } SO_2/\text{barrel}$$

Originally, the SO_2 emissions from the incinerator scrubber were estimated at 10.6 lb/hr (pg. 7-5-14 of DDP Report). However, planned operational considerations such as using more caustic should improve scrubbing efficiency so that average emissions of 9.7 lb/hr or less of SO_2 from the incinerator flue stack can be achieved. If higher SO_2 removal efficiency is necessary, other measures such as installing additional trays in the scrubber will be considered.

It should be pointed out that emissions of SO_2/barrel of oil from a commercial operation would be considerably lower because the product gas would be utilized as a fuel source and, thus, would not be incinerated, and naptha produced in the retorting process would be recovered. For the demonstration facility, it is not feasible to recover the naptha produced or to use all of the product gas generated.

Rio Blanco Oil Shale Company
2851 South Parker Road Suite 500
Aurora, Colorado 80014 (303) 695-2400
A GENERAL PARTNERSHIP
GULF OIL CORPORATION • STANDARD OIL COMPANY (INDIANA)

(2)

February 5, 1981

Mr. John Plog
Colorado Department of Health
Air Pollution Control Division
4210 East 11th Avenue
Denver, Colorado 80220

Re: Additional information on emission sources for RBOSC's Lurgi Demonstration Project

Dear Mr. Plog:

Enclosed is the additional information that you requested in our meeting on February 3, 1981. I have included the changes on the applicable APEN's and have highlighted the changes to facilitate your review of the material.

Additional information pertaining to certain of the sources are included below:

- Product gas will be the primary auxillary fuel used to fire the Lurgi retort. Natural gas will probably be used only during startup operations. Although the amount of product gas consumed will depend on the grade of shale being retorted and other variables it is anticipated that an average consumption of approximately 1380 SCFM of approximately 980 BTU/SCF product gas will be required.

- Normal steam boiler operation will vary with the season. During the summer, it is estimated that one boiler operating at 25% will meet plant requirements. During the winter, both boilers will normally operate at about 30% capacity. During the spring and fall, both boilers will operate at approximately 20% capacity.

- The cooling tower will be a two cell installation with approximately 1500 gpm circulation for each cell. The tower will be designed to cool 95°F return water to a design temperature (summer) of 68°F. Only water vapor and mist will be emitted from this source. Demisters will be installed in each cell to reduce droplet carryover to about 0.01% of the circulation flow.

8100406

- For product oil loading, no vapor recovery system is planned. Product oil will be contained in a closed system and will be transferred to the tank truck via an oil line placed near the bottom of the receiving tank.

- Specifications for the product oil are shown on page 4-3-7 of the Lurgi Demonstration Project Report.

- Average throughput for the product storage tank (E-6001) will be approximately 600 barrels/day based on the projected operating factor and product split equally between both storage tanks. Tank turnovers per year are approximately 5.

$$\frac{600 \text{ barrels} \times 365 \text{ day/yr}}{45{,}000 \text{ barrel capacity}} \cong 5$$

- Data on fill rates of the various tanks have been added to applicable APEN's.

I have also included an additional APEN for the firewater pump diesel engine. As discussed in our meeting on February 3, the total filing fee previously submitted was in excess of that required by $40 and thus no additional fee for this application is included. Please call if you have additional questions.

Sincerely,

James W. Ericson
Environmental Coordinator

JWE:bmc

Atttachments

AIR POLLUTANT EMISSIONS NOTICE
Colorado Department of Health
(Stationary Source)

FIRM NAME: RIO BLANCO OIL SHALE COMPANY

PERMIT NO. (To be assigned by Health Dept) NEW __ EXISTING __ MODIFICATION __ FOLLOW UP __ | Page No.

MAIL ADDRESS: 2851 South Parker Rd., Aurora, CO | PLANT LOCATION: Piceance Creek Route, Rifle, CO | COUNTY: Rio Blanco

PERSON TO CONTACT REGARDING THIS INFORMATION: James W. Ericson | TITLE: Environmental Coordinator | PHONE: 695-2400

GENERAL DISCRIPTION OF THIS PLANT'S FUNCTION: Oil Shale Production | Will you accept collect calls? X Yes __ No | Best hours to call: 7AM-4:30

A. GENERAL INFORMATION

No. of Employees	Land Area	Normal Operation of Plant* Hours/Day	Days/Week	Weeks/Year	Seasonal Throughput (% of Annual) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov
970 (Est.)		24	7	52	25	25	25	25

*Specify any significantly different schedule of a unit or process which emits air pollutants: Used less than 6 hours/year

B. STACK OR VENT INFORMATION FOR ..... (Identify which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture
20 ft	1'6" ft	1000 °F	2800 ACFM	1580 ft/min	12 %

C. FUEL INFORMATION

Description of Combustion Unit	Design Rate (10^6BTU/Hr)	Kind of Fuel Burned	Annual Consumption (Tons, 10^3gal, or 10^6SCF)	Heating Value (10^6BTU/Annual Unit)	Per Cent by Weight Sulfur (X.XX%)	Ash (XX.X%)	Seasonal Use (% of Annual Use) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Spare Use (% Ann.)
Diesel Engine (500 hp)	4.5	Diesel Fuel	80 gal/year	NA	0.1	0.03	EMERGENCY ONLY				

D. PROCESS INFORMATION

Description of Processing Unit	Raw Materials, Solvents, Cleaning Agents, Waste, etc. Involved in Process	Annual Consumption (Specify Units)	Design Rate (Specify Units/Hour)	Finished Products: Product Name or Description	Finished Products: Annual Output	(APCD Use) SCC
Diesel drive for firewater pump	NA					

E. POLLUTION CONTROL EQUIPMENT

Pollutant	Type of Control Equipment: Primary	Type of Control Equipment: Secondary	Overall Collection Efficiency	Cost of Control Equipment: Initial Installation	Annual Total Operating Cost	Annual Energy Used (Specify Units & Type)	(To be completed by Air Pollution Control Division) Emissions Estimate Tons/Year	Uncontrolled Emissions Tons/Year	Allowable Emissions Tons/Year	Estimation Method
Particulate	--	--								
SO_x	--	--								
NO_x	--	--								
HC	--	--								
CO	--	--								
Pb	--	--								
Other:										

REMARKS: Diesel engine will be run monthly to insure proper operation, otherwise will only be operated during fires.

Signature of Person Legally Authorized to Supply Data: X. J. Miller

Typed Name & Title: J. B. Miller, President

COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
Denver, Colorado 80220
(303) 320-8180

(For APCD Use) | Date of Record | UTM | Owner | Process Classif. | UTM Coordinates | Colorado Air Quality Control Regulations | Source Code

Colorado Department of Health (Stationary Source) FIRM NAME ..Rio Blanco Oil Shale Project.....

(To be assigned by Health Dept) NEW__ EXISTING__ MODIFICATION__ FOLLOW UP__

MAIL ADDRESS ..2851 South Parker Rd., Aurora, CO..... PLANT LOCATION ..Piceance Creek Route, Rifle, CO..... COUNTY Rio Blanco

PERSON TO CONTACT REGARDING THIS INFORMATION ..James W. Ericson..... TITLE Environmental Coordinator PHONE 695-2400

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION Oil Shale Production..... Will you accept collect calls? X Yes __ No Best hours to call: 7:00 - 5:00

A. GENERAL INFORMATION

No. of Employees	Land Area	Normal Operation of Plant* Hours/Day	Days/Week	Weeks/Year	Seasonal Throughput (% of Annual) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov
970 (max.)		24	7	52	25	25	25	25

*Specify any significantly different schedule of a unit or process which emits air pollutants

B. STACK OR VENT INFORMATION FOR ..... (Identify which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture
22 ft	2 ft	ambient°F	6000 ACFM	810 ft/min	NA %

CEMENT BATCH PLANT

C. FUEL INFORMATION

Description of Combustion Unit	Design Rate (10^6BTU/Hr)	Kind of Fuel Burned	Annual Consumption (Tons, 10^3Gal, or 10^6SCF)	Heating Value (10^6BTU/Annual Unit)	Per Cent by Weight Sulfur (X.XXX)	Ash (XX.XX)	Seasonal Use (% of Annual Use) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Specific Gravity (% Ash)
N/A											

D. PROCESS INFORMATION

Description of Processing Unit	Raw Materials, Solvents, Cleaning Agents, Waste, etc. Involved in Process	Annual Consumption (Specify Units)	Design Rate (Specify Units/Hour)	Finished Products: Product Name or Description	Finished Products: Annual Output	(APCD Use) SCC
storage bins, silos, weight houses, mixer	sand, aggregate, cement, water		6.67 yd^3/hr	concrete		

E. POLLUTION CONTROL EQUIPMENT

Pollutant	Type of Control Equipment: Primary	Type of Control Equipment: Secondary	Overall Collection Efficiency	Costs of Control Equipment: Initial Installation	Costs of Control Equipment: Annual Total Operating Cost	Costs of Control Equipment: Annual Energy Used (Specify Units & Type)	(To be completed by Air Pollution Control Division) Emissions Estimate Tons/Year	Uncontrolled Emissions Tons/Year	Allowable Emissions Tons/Year	Estimation Method
Particulate	Baghouse		99%		Equipment is Leased					
SO_x										
NO_x										
HC										
CO										
Pb										
Other:										

REMARKS: See Best Available Control Technology section of the PSD Application submitted to EPA Region VIII for a more complete description of the controls for each subprocess. See Appendix R of same for detailed fugitive dust calculations.

Signature of Person Legally Authorized to Supply Data: X. Blaine Miller

Typed Name & Title: J. Blaine Miller, President, Rio Blanco Oil Shale Company

COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
Denver, Colorado 80220
(303) 320-8333

(For CDH Use) County ID | AQCR | Point ID | Date Received (Julian) | City ID | UTM Zone | Code | Process Class SIC | SCC | UTM Coordinates | Colorado Air Quality Control Regulations | Source Type

AIR POLLUTANT EMISSION NOTICE
Colorado Department of Health (Stationary Source)

FIRM NAME: RIO BLANCO OIL SHALE COMPANY

(To be assigned by Health Dept) NEW__ EXISTING__ MODIFICATION__ FOLLOW UP__

MAIL ADDRESS: 2851 South Parker Rd., Aurora, CO PLANT LOCATION: Piceance Creek Route, Rifle, CO COUNTY: Rio Blanco

PERSON TO CONTACT REGARDING THIS INFORMATION: James W. Ericson TITLE: Environmental Coordinator PHONE: 695-2400

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION: Oil Shale Production Will you accept collect calls? X Yes __ No Best hours to call: Anytime

A. GENERAL INFORMATION

No. of Employees	Land Area	Normal Operation of Plant* Hours/Day	Days/Week	Weeks/Year	Seasonal Throughput (% of Annual) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov
970 (Max.)		24	7	52	25	25	25	25

*Specify any significantly different schedule of a unit or process which emits air pollutants: Emergency electrical generator expected to operate less than one day per year

B. STACK OR VENT INFORMATION FOR ... (Identify which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture
20 ft	2.5 ft	1000 °F	7,400 ACFM	1500 ft/min	12 %

C. FUEL INFORMATION

Description of Combustion Unit	Design Rate (10^6BTU/Hr)	Kind of Fuel Burned	Annual Consumption (Tons, 10^3Gal, or 10^6SCF)	Heating Value (10^6BTU/Annual Unit)	Per Cent by Weight Sulfur(X.XX)	Ash(XX.X)	Seasonal Use (% of Annual Use) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Spare Hrs (% Ann.)
Emergency electrical generator	12	Diesel	~~Variable~~ 2100 gal/yr	140,000/gal.	0.1-0.7	Trace	EMERGENCY		ONLY		

D. PROCESS INFORMATION

Description of Processing Unit	Raw Materials, Solvents, Cleaning Agents, Waste, etc. Involved in Process	Annual Consumption (Specify Units)	Design Rate (Specify Units/Hour)	Finished Products Product Name or Description	Finished Products Annual Output	(APCD Use) SCC

E. POLLUTION CONTROL EQUIPMENT

Pollutant	Type of Control Equipment Primary	Type of Control Equipment Secondary	Overall Collection Efficiency	Cost of Control Equipment Initial Installation	Cost of Control Equipment Annual Total Operating Cost	Cost of Control Equipment Annual Energy Used (Specify Units & Type)	(To be completed by Air Pollution Control Division) Emissions Estimate Tons/Year	Uncontrolled Emissions Tons/Year	Allowable Emissions Tons/Year	Estimation Method
Particulate	--	--								
SO_x	--	--								
NO_x	--	--								
HC	--	--								
CO	--	--								
Pb	--	--								
Other:										

REMARKS: 1000 KW diesel powered generator. Additional data on the Emergency electrical generator are included in Section 4, Chapter 2 and Section 7, Chapter 5 of the Lurgi Demonstration Project Report

Signature of Person Legally Authorized to Supply Data: X [signature]

Typed Name & Title: J. Blaine Miller, President, Rio Blanco Oil Shale Company

COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
Denver, Colorado 80220
(303) 320-4180

(For APCD Use) County ID | AQCR | Plant ID | Date Rec'd (Julian) | City ID | UTM Zone | Owner Code | Process Class SIC | SCC | UTM Coordinates Horizontal | Vertical | Colorado Air Quality Control Regulations | Source

Colorado Department of Health (Stationary Source) — FOR AGENCY USE ONLY — (To be assigned by Health Dept) NEW__ EXISTING__ MODIFICATION__ FOLLOW UP__

MAIL ADDRESS 2851 South Parker Rd., Aurora, CO PLANT LOCATION Piceance Creek Route, Rifle, CO COUNTY Rio Blanco

PERSON TO CONTACT REGARDING THIS INFORMATION James W. Ericson TITLE Environmental Coordinator PHONE 695-2400

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION Oil Shale Production Will you accept collect calls? X Yes __ No Best hours to call: Anytime

A. GENERAL INFORMATION		Normal Operation of Plant*			Seasonal Throughput (% of Annual)				*Specify any significantly different schedule of a unit or process which emits air pollutants
No. of Employees	Land Area	Hours/Day	Days/Week	Weeks/Year	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	
970 (MAF Area)		24	7	52	25	25	25	25	

B. STACK OR VENT INFORMATION FOR ... (Identify which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture
300 ft	8 ft	460 °F	145,000 ACFM	2,900 ft/min	26 %

C. FUEL INFORMATION Description of Combustion Unit	Design Rate (10^6 BTU/Hr)	Kind of Fuel Burned	Annual Consumption (Tons, 10^3 Gal, or 10^6 SCF)	Heating Value (10^6 BTU/Annual Unit)	Per Cent by Weight Sulfur (X.XX)	Ash (XX.X)	Seasonal Use (% of Annual Use) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Spare (% Ann.)
Lurgi retort		Coke on shale					25	25	25	25	
		Product gas	725 x 10^6 SCF	7.1×10^5	0.4		25	25	25	25	
							25	25	25	25	

D. PROCESS INFORMATION Description of Processing Unit	Raw Materials, Solvents, Cleaning Agents, Waste, etc. Involved in Process	Annual Consumption (Specify Units)	Design Rate (Specify Units/Hour)	Finished Products: Product Name or Description	Finished Products: Annual Output	(APCD Use) SCC
Lurgi surface retort	Oil Shale	1,606,000 ton/yr	183 tons/hr	raw shale oil	813,950 bbl	
	Processed shale	1,606,000 tons/yr	183 tons/hr	--		

E. POLLUTION CONTROL EQUIPMENT Pollutant	Type of Control Equipment: Primary	Secondary	Overall Collection Efficiency	Cost of Control Equipment: Initial Installation	Annual Total Operating Cost	Annual Energy Used (Specify Units & Type)	(To be completed by Air Pollution Control Division) Emissions Estimate Tons/Year	Uncontrolled Emissions Tons/Year	Allowable Emissions Tons/Year	Estimation Method
Particulate	Cyclone	ESP	99.98							
SO_x	Removed by process - See section 7, Chapter 5 DDP		~93							
NO_x	--	--	--							
HC	--	--	--							
CO	--	--	--							
Pb	--	--	--							
Other:										

REMARKS: Additional data on emission from the Lurgi retort flue stack are available in Section 4, Chapter 3 and Section 7, Chapter 5 of the Lurgi Demonstration Project report.

Signature of Person Legally Authorized to Supply Data: J. Blaine Miller

Typed Name & Title: J. Blaine Miller, President, Rio Blanco Oil Shale Company

COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
Denver, Colorado 80220
(303) 320-8180

APCD County ID | APCA | Plant ID | of Rd (Miles) | City ID | UTM Zone | Zone Code | SIC | SCC | UTM Coordinates Horizontal | Vertical | ECAP | Condition Code | Air Quality Control Region | Supersedes Permit No. | Date

Colorado Department of Health (Stationary Source) — PLANT CODE — (To be assigned by Health Dept) NEW __ EXISTING __ MODIFICATION __ FOLLOW UP __

MAIL ADDRESS 2851 South Parker Rd., Aurora, CO — PLANT LOCATION Piceance Creek Route, Rifle, CO — COUNTY Rio Blanco

PERSON TO CONTACT REGARDING THIS INFORMATION James W. Ericson — TITLE Environmental Coordinator — PHONE 695-2400

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION Oil Shale Production — Will you accept collect calls? X Yes __ No — Best hours to call: Anytime

A. GENERAL INFORMATION

No. of Employees	Land Area	Normal Operation of Plant* Hours/Day	Days/Week	Weeks/Year	Seasonal Throughput (% of Annual) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov
970 (Max.)		24	7	52	25	25	25	25

*Specify any significantly different schedule of a unit or process which emits air pollutants: summer: 1 boiler - 25% capacity; winter: both boilers - 30% cap.; fall/spring: both boilers - 20% cap.

B. STACK OR VENT INFORMATION FOR (Identify which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture
100 ft	4.5 ft	350 °F	82,000 ACFM	5,160 ft/min	10 %

C. FUEL INFORMATION

Description of Combustion Unit	Design Rate (10^6 BTU/Hr)	Kind of Fuel Burned	Annual Consumption (Tons, 10^3 Gal, or 10^6 SCF)	Heating Value (10^6 BTU/Annual Unit)	Per Cent by Weight Sulfur (X.XXX)	Ash (XX.XX)	Seasonal Use (% of Annual Use) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Specific (I Am.)
Steam boiler	99 each	natural gas	784x10^6 SCF (each)		--	--	36	24	16	24	

D. PROCESS INFORMATION

Description of Processing Unit	Raw Materials, Solvents, Cleaning Agents, Waste, etc. Involved in Process	Annual Consumption (Specify Units)	Design Rate (Specify Units/Hour)	Finished Products: Product Name or Description	Finished Products: Annual Output	(APCD Use) SCC
Steam boiler						

E. POLLUTION CONTROL EQUIPMENT

Pollutant	Type of Control Equipment: Primary	Type of Control Equipment: Secondary	Overall Collection Efficiency	Cost of Control Equipment: Initial Installation	Annual Total Operating Cost	Annual Energy Used (Specify Units & Type)	(To be completed by Air Pollution Control Division) Emissions Estimate Tons/Year	Uncontrolled Emissions Tons/Year	Allowable Emissions Tons/Year	Estimation Method
Particulate	--	--								
SO_x	--	--								
NO_x	--	--								
HC	--	--								
CO	--	--								
Pb	--	--								
Others										

REMARKS: Additional data on the steam boiler are included in Section 4, Chapter 3, and Section 7, Chapter 5 of the Lurgi Demonstration Project report

Signature of Person Legally Authorized to Supply Data: X. J. Blaine Miller

Typed Name & Title: J. Blaine Miller, President, Rio Blanco Oil Shale Company

COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
Denver, Colorado 80220
(303) 320-8160

APCD County ID | APCD Plant ID | Type of Action | City ID | UTM Zone | UTM Code | SIC | UTM Coordinates Horizontal | UTM Coordinates Vertical | Colorado Air Quality Control Regions | Source Code

AIR POLLUTANT EMISSIONS NOTICE
Colorado Department of Health
(Stationary Source)

FIRM NAME: RIO BLANCO OIL SHALE COMPANY

PERMIT NO. ..... (To be assigned by Health Dept)
Page No. .....
NEW__ EXISTING__ MODIFICATION__ FOLLOW UP

MAIL ADDRESS: 2851 South Parker Rd., Aurora, CO PLANT LOCATION: Piceance Creek Route, Rifle, CO COUNTY: Rio Blanco

PERSON TO CONTACT REGARDING THIS INFORMATION: James W. Ericson TITLE: Environmental Coordinator PHONE: 695-2400

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION: Oil Shale Production

Will you accept collect calls? Yes __ No __
Best hours to call: .....

A. GENERAL INFORMATION

No. of Employees	Land Area	Normal Operation of Plant* Hours/Day	Days/Week	Weeks/Year	Seasonal Throughput (% of Annual) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov
970 (max.)		12	7	52	25	25	25	25

*Specify any significantly different schedule of a unit or process which emits air pollutants

B. STACK OR VENT INFORMATION FOR ..... (Identify which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture	
60 ft	2.5 ft	ambient ± 15° °F	13,200 ACFM	2690 ft/min	NA %	Centralized baghouse (See attached information)

C. FUEL INFORMATION

Description of Combustion Unit	Design Rate (10^6 BTU/Hr)	Kind of Fuel Burned	Annual Consumption (Tons, 10^3 Gal, or 10^6 SCF)	Heating Value (10^6 BTU/Annual Unit)	Per Cent by Weight Sulfur (X.XXX)	Ash (XX.XX)	Seasonal Use (% of Annual Use) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Space Htg (% Ann.)

D. PROCESS INFORMATION

Description of Processing Unit	Raw Materials, Solvents, Cleaning Agents, Waste, etc. Involved in Process	Annual Consumption (Specify Units)	Design Rate (Specify Units/Hour)	Finished Products Product Name or Description	Finished Products Annual Output	(APCD Use) SCC
Shale ore crushing unit	Shale ore	1,401,600 tons	320 tons/hr	Crushed ore	1,401,600 tons	

E. POLLUTION CONTROL EQUIPMENT

Pollutant	Type of Control Equipment Primary	Type of Control Equipment Secondary	Overall Collection Efficiency	Cost of Control Equipment Initial Installation	Cost of Control Equipment Annual Total Operating Cost	Cost of Control Equipment Annual Energy Used (Specify Units & Type)	(To be completed by Air Pollution Control Division) Emissions Estimate Tons/Year	Uncontrolled Emissions Tons/Year	Allowable Emissions Tons/Year	Estimation Method
Particulate	baghouse	--	99%	$325,000	$10,862	271,560 KWH				
SO_x	--	--	--	--	--	--				
NO_x	--	--	--	--	--	--				
HC	--	--	--	--	--	--				
CO	--	--	--	--	--	--				
Pb	--	--	--	--	--	--				
Other:										

REMARKS: See attached information and Section 3 of the Lurgi Demonstration Project Report for additional information.

Signature of Person Legally Authorized to Supply Data: X. J. Blaine Miller

Typed Name & Title: J. Blaine Miller, President, Rio Blanco Oil Shale Company

COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
Denver, Colorado 80220
(303) 320-8180

(For APCD Use) County ID	AQCR	Plant ID	Date of Record (Julian)	City ID	UTM Zone	Owner Code	Process Classes SIC	SCC	UTM Coordinates Horizontal	Vertical	Colorado Air Quality Control Regulations	Source II/I

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off-tract property) E-6001 on emission plot plan

3. TANK IDENTIFICATION (NUMBER OR NAME): Product Storage Tank

4. TANK CAPACITY: 45,000 BARRELS — GALLONS 1,890,000

5. TANK DIMENSIONS: DIAMETER 82' HEIGHT 48' LENGTH ___ WIDTH ___

6. TANK SHAPE: CYLINDRICAL [X] SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE ___

7. TANK MATERIALS OF CONSTRUCTION: STEEL [X] WOOD ☐ OTHER ☐ SPECIFY ___

8. TANK PAINT: Insulated CHALKING WHITE ☐ LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

9. TANK CONDITION: GOOD [X] FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION [X] ALTERATION ☐

11. TYPE OF TANK: (CHECK ALL APPLICABLE) FIXED ROOF ☐ PRESSURE ☐ INTERNALLY HEATED [Y] UNDERGROUND ☐ FLOATING ROOF [Y] OPEN TOP ☐ INSULATED [Y] OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON [X] OTHER ☐ DESCRIBE ___

TYPE OF SEAL: SINGLE ☐ DOUBLE [Y] OTHER ☐ DESCRIBE ___

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED [X] OTHER ☐ DESCRIBE ___

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE: NONE

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL: NONE

	Number	Pressure Setting	Vacuum Setting	Discharging to: (Check) Atmosphere	Vapor Control	Flare
Combination						
Pressure						
Vacuum						
Open						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK: Product shale oil DENSITY: 7.4 LBS/GAL. (OR) ___ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK: MINIMUM TEMPERATURE ___ °F MAXIMUM TEMPERATURE ___ °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).

VAPOR PRESSURE: - LBS. REID (OR) 0.5 LBS. PER SQ. IN. ABSOLUTE AT 140 °F

INITIAL BOILING POINT: ___ °F

FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: ___ °F

18. OPERATIONAL DATA: SUBMERGED LOADING OPERATION

MAXIMUM FILLING RATE: 100 BARRELS PER HOUR (OR) ≈4200 GALLONS PER HOUR

AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) 24 FT

AVERAGE THROUGHPUT: ≈600 BARRELS PER day (OR) 25,000 GALLONS PER DAY

TANK TURNOVERS PER YEAR: 5

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:

NAME OF SOLVENT: N.A. NAME OF MATERIAL DISSOLVED: ___

CONCENTRATION OF MATERIAL DISSOLVED: ___ % BY WEIGHT (OR) ___ % BY VOLUME (OR ___ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:

IDENTIFY THE MATERIAL: N.A.

PRESSURE AT WHICH MATERIAL IS STORED: ___ LBS. PER SQ. IN. GAGE AT ___ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J. Blaine Miller

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.

NAME X J. Blaine Miller

TITLE President, Rio Blanco Oil Shale Company

Form 25 (Rev. 2-75-40)

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off-tract property) E-6002 on emission plot plan

3. TANK IDENTIFICATION (NUMBER OR NAME): Product Storage Tank

4. TANK CAPACITY: 45,000 BARRELS GALLONS 1,890,000

5. TANK DIMENSIONS: DIAMETER 82' HEIGHT 48' LENGTH _____ WIDTH _____

6. TANK SHAPE: CYLINDRICAL [X] SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE _____

7. TANK MATERIALS OF CONSTRUCTION: STEEL [X] WOOD ☐ OTHER ☐ SPECIFY _____

8. TANK PAINT: Insulated CHALKING WHITE ☐ LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

9. TANK CONDITION: GOOD [X] FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION [X] ALTERATION ☐

11. TYPE OF TANK: (CHECK ALL APPLICABLE) FIXED ROOF ☐ PRESSURE ☐ INTERNALLY HEATED [Y] UNDERGROUND ☐
FLOATING ROOF [Y] OPEN TOP ☐ INSULATED [Y] OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON [X] OTHER ☐ DESCRIBE _____

TYPE OF SEAL: SINGLE ☐ DOUBLE [X] OTHER ☐ DESCRIBE _____

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED [Y] OTHER ☐ DESCRIBE _____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE: NONE

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL: NONE

	NUMBER	PRESSURE SETTING	VACUUM SETTING	DISCHARGING TO: (CHECK) ATMOSPHERE	VAPOR CONTROL	FLARE
COMBINATION						
PRESSURE						
VACUUM						
OPEN						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK:
Product Shale Oil DENSITY: 7.6 LBS/GAL. (OR) _____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK:
MINIMUM TEMPERATURE _____ °F MAXIMUM TEMPERATURE _____ °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).
VAPOR PRESSURE: _____ LBS. REID (OR) 0.5 LBS. PER SQ. IN. ABSOLUTE AT 140 °F
INITIAL BOILING POINT: _____ °F
FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: _____ °F

18. OPERATIONAL DATA: SUBMERGED LOADING OPERATION
MAXIMUM FILLING RATE: 100 BARRELS PER HOUR (OR) 4200 GALLONS PER HOUR
AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) 24 FT
AVERAGE THROUGHPUT: 600 BARRELS PER ~~day~~ (OR) 25,200 GALLONS PER DAY
TANK TURNOVERS PER YEAR: 5

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:
NAME OF SOLVENT: N.A. NAME OF MATERIAL DISSOLVED: _____
CONCENTRATION OF MATERIAL DISSOLVED: _____ % BY WEIGHT (OR) _____ % BY VOLUME (OR _____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:
IDENTIFY THE MATERIAL: _____
PRESSURE AT WHICH MATERIAL IS STORED: _____ LBS. PER SQ. IN. GAGE AT _____ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J. Blaine Miller

TYPE OR PRINT NAME & OFFICIAL TITLE OF PERSON SIGNING DATA FORM.

NAME X J. Blaine Miller

TITLE President, Rio Blanco Oil Shale Company

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off-tract property) E-6006 on emission plot plan

3. TANK IDENTIFICATION (NUMBER OR NAME): Product Oil Loading Station

4. TANK CAPACITY: BARRELS _____ GALLONS _____

5. TANK DIMENSIONS: DIAMETER _____ HEIGHT _____ LENGTH _____ WIDTH _____

6. TANK SHAPE: CYLINDRICAL ☐ SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE _____

7. TANK MATERIALS OF CONSTRUCTION: STEEL ☐ WOOD ☐ OTHER ☐ SPECIFY _____

8. TANK PAINT: CHALKING WHITE ☐ LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

9. TANK CONDITION: GOOD ☐ FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION ☐ ALTERATION ☐

11. TYPE OF TANK: (CHECK ALL APPLICABLE) FIXED ROOF ☐ PRESSURE ☐ INTERNALLY HEATED ☐ UNDERGROUND ☐ FLOATING ROOF ☐ OPEN TOP ☐ INSULATED ☐ OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON ☐ OTHER ☐ DESCRIBE _____

TYPE OF SEAL: SINGLE ☐ DOUBLE ☐ OTHER ☐ DESCRIBE _____

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED ☐ OTHER ☐ DESCRIBE _____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE:

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL:

	Number	Pressure Setting	Vacuum Setting	Discharging To: (Check) Atmosphere	Vapor Control	Flare
Combination						
Pressure						
Vacuum						
Open						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK:
DENSITY: _____ LBS/GAL. (OR) _____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK:
MINIMUM TEMPERATURE _____ °F MAXIMUM TEMPERATURE _____ °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).

VAPOR PRESSURE: _____ LBS. REID (OR) _____ LBS. PER SQ. IN. ABSOLUTE AT _____ °F

INITIAL BOILING POINT: _____ °F

FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: _____ °F

18. OPERATIONAL DATA:

MAXIMUM FILLING RATE: Submerged Loading 860 BARRELS PER HOUR (OR) 36,000 GALLONS PER HOUR

AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) N/A FT

AVERAGE THROUGHPUT: 1200 BARRELS PER DAY (OR) 50,000 GALLONS PER DAY

TANK TURNOVERS PER YEAR: N/A

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:

NAME OF SOLVENT: N/A NAME OF MATERIAL DISSOLVED: _____

CONCENTRATION OF MATERIAL DISSOLVED: _____ % BY WEIGHT (OR) _____ % BY VOLUME (OR _____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:

IDENTIFY THE MATERIAL: N/A

PRESSURE AT WHICH MATERIAL IS STORED: _____ LBS. PER SQ. IN. GAGE AT _____ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J. Blaine Miller

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.

NAME X J. Blaine Miller

TITLE President, Rio Blanco Oil Shale Company

APCD-35 (Rev. 2-75-40)

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off-tract property) E-6007 on emission plot plan

3. TANK IDENTIFICATION (NUMBER OR NAME): Diesel Fuel Storage Tank

4. TANK CAPACITY: BARRELS 572 GALLONS 24,000

5. TANK DIMENSIONS: DIAMETER 15' HEIGHT 20' LENGTH _____ WIDTH _____

6. TANK SHAPE: CYLINDRICAL ☒ SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE _____

7. TANK MATERIALS OF CONSTRUCTION: STEEL ☒ WOOD ☐ OTHER ☐ SPECIFY _____

8. TANK PAINT: CHALKING WHITE ☒ LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

9. TANK CONDITION: GOOD ☒ FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION ☒ ALTERATION ☐

11. TYPE OF TANK: (CHECK ALL APPLICABLE) FIXED ROOF ☒ CONE FLOATING ROOF ☐ PRESSURE ☐ OPEN TOP ☐ INTERNALLY HEATED ☐ INSULATED ☐ UNDERGROUND ☐ OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON ☐ OTHER ☐ DESCRIBE _____

TYPE OF SEAL: SINGLE ☐ DOUBLE ☐ OTHER ☐ DESCRIBE _____

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED ☐ OTHER ☐ DESCRIBE _____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE:

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL: to follow

	NUMBER	PRESSURE SETTING	VACUUM SETTING	DISCHARGING TO: (CHECK) ATMOSPHERE	VAPOR CONTROL	FLARE
COMBINATION						
PRESSURE						
VACUUM						
OPEN						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK: Diesel Fuel DENSITY: 6.9 LBS/GAL. (OR) _____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK: MINIMUM TEMPERATURE 30 °F MAXIMUM TEMPERATURE 105 °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).

VAPOR PRESSURE: _____ LBS. REID (OR) 0.5 Max LBS. PER SQ. IN. ABSOLUTE AT 100 °F

INITIAL BOILING POINT: _____ °F

FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: _____ °F

18. OPERATIONAL DATA: Submerged Loading

MAXIMUM FILLING RATE: 290 BARRELS PER HOUR (OR) 12000 GALLONS PER HOUR

AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) 18 FT

AVERAGE THROUGHPUT: 3,000 BARRELS PER Year (OR) 350 GALLONS PER DAY

TANK TURNOVERS PER YEAR: ~5

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:

NAME OF SOLVENT: N/A NAME OF MATERIAL DISSOLVED: _____

CONCENTRATION OF MATERIAL DISSOLVED: _____ % BY WEIGHT (OR) _____ % BY VOLUME (OR _____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:

IDENTIFY THE MATERIAL: N/A

PRESSURE AT WHICH MATERIAL IS STORED: _____ LBS. PER SQ. IN. GAGE AT _____ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J. Smith

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.

NAME X

TITLE President, Rio Blanco Oil Shale Company

APC-35 (Rev. 2-75-40)

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off-tract property) E-6008 on emission plot plan

3. TANK IDENTIFICATION (NUMBER OR NAME): Diesel Fuel Day Tank

4. TANK CAPACITY: BARRELS _____ 2,000 GALLONS

5. TANK DIMENSIONS: DIAMETER 6'6" HEIGHT _____ LENGTH 10'10" WIDTH _____

6. TANK SHAPE: CYLINDRICAL ☒ SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE _____

7. TANK MATERIALS OF CONSTRUCTION: STEEL ☒ WOOD ☐ OTHER ☐ SPECIFY _____

8. TANK PAINT: CHALKING WHITE ☒ LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

9. TANK CONDITION: GOOD ☒ FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION ☒ ALTERATION ☐

11. TYPE OF TANK: Horizontal FRP (CHECK ALL APPLICABLE) FIXED ROOF ☒ FLOATING ROOF ☐ PRESSURE ☒ OPEN TOP ☐ INTERNALLY HEATED ☐ INSULATED ☐ UNDERGROUND ☒ OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON ☐ OTHER ☐ DESCRIBE _____

TYPE OF SEAL: SINGLE ☐ DOUBLE ☐ OTHER ☐ DESCRIBE _____

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED ☐ OTHER ☐ DESCRIBE _____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE:

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL:

	Number	Pressure Setting	Vacuum Setting	Discharging To: (Check) Atmosphere	Vapor Control	Flare
Combination						
Pressure						
Vacuum						
Open						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK: Diesel fuel
DENSITY: _____ LBS/GAL. (OR) _____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK:
MINIMUM TEMPERATURE -30 °F MAXIMUM TEMPERATURE 105 °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).
VAPOR PRESSURE: _____ LBS. REID (OR) 0.5 LBS. PER SQ. IN. ABSOLUTE AT 100 °F Max.
INITIAL BOILING POINT: _____ °F
FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: _____ °F

18. OPERATIONAL DATA: Submerged Loading
MAXIMUM FILLING RATE: 70 BARRELS PER HOUR (OR) 3000 GALLONS PER HOUR
AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) 6 FT
AVERAGE THROUGHPUT: 100 BARRELS PER Year (OR) 12 GALLONS PER DAY
TANK TURNOVERS PER YEAR: 2

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:
NAME OF SOLVENT: N/A NAME OF MATERIAL DISSOLVED: _____
CONCENTRATION OF MATERIAL DISSOLVED: _____ % BY WEIGHT (OR) _____ % BY VOLUME (OR _____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:
IDENTIFY THE MATERIAL: _____
PRESSURE AT WHICH MATERIAL IS STORED: _____ LBS. PER SQ. IN. GAGE AT _____ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J. Blaine Miller

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.

NAME X J. Blaine Miller

TITLE President, Rio Blanco Oil Shale Company

EDC-35 (Rev. 2-75-40)

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off-tract property) E-6009 on emission plot plan

3. TANK IDENTIFICATION (NUMBER OR NAME): Diesel Fuel Day Tank

4. TANK CAPACITY: BARRELS — GALLONS: 4,000

5. TANK DIMENSIONS: DIAMETER 6'6" HEIGHT ____ LENGTH 19'10" WIDTH ____

6. TANK SHAPE: CYLINDRICAL [X] SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE ____

7. TANK MATERIALS OF CONSTRUCTION: STEEL [X] WOOD ☐ OTHER ☐ SPECIFY ____

8. TANK PAINT: CHALKING WHITE [X] LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

9. TANK CONDITION: GOOD [X] FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION [X] ALTERATION ☐

11. TYPE OF TANK: Horizontal FRP (CHECK ALL APPLICABLE) FIXED ROOF [X] FLOATING ROOF ☐ PRESSURE [X] OPEN TOP ☐ INTERNALLY HEATED ☐ INSULATED ☐ UNDERGROUND [X] OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON ☐ OTHER ☐ DESCRIBE ____

TYPE OF SEAL: SINGLE ☐ DOUBLE ☐ OTHER ☐ DESCRIBE ____

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED ☐ OTHER ☐ DESCRIBE ____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE:

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL:

	NUMBER	PRESSURE SETTING	VACUUM SETTING	DISCHARGING TO: (CHECK) ATMOSPHERE	VAPOR CONTROL	FLARE
COMBINATION						
PRESSURE						
VACUUM						
OPEN						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK: Diesel fuel
DENSITY: ____ LBS/GAL. (OR) ____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK:
MINIMUM TEMPERATURE -30 °F MAXIMUM TEMPERATURE 105 °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).
VAPOR PRESSURE: ____ LBS. REID (OR) 0.5 Max. LBS. PER SQ. IN. ABSOLUTE AT 100 °F
INITIAL BOILING POINT: ____ °F
FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: ____ °F

18. OPERATIONAL DATA: Submerged Loading
MAXIMUM FILLING RATE: 70 BARRELS PER HOUR (OR) 3000 GALLONS PER HOUR
AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) 6 FT
AVERAGE THROUGHPUT: 200 BARRELS PER Year (OR) 23 GALLONS PER DAY
TANK TURNOVERS PER YEAR: 2

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:
NAME OF SOLVENT: N/A NAME OF MATERIAL DISSOLVED: ____
CONCENTRATION OF MATERIAL DISSOLVED: ____ % BY WEIGHT (OR) ____ % BY VOLUME (OR ____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:
IDENTIFY THE MATERIAL: N/A
PRESSURE AT WHICH MATERIAL IS STORED: ____ LBS. PER SQ. IN. GAGE AT ____ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J. Blaine Miller

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.

NAME X J. Blaine Miller

TITLE President, Rio Blanco Oil Shale Company

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off tract property) E-6010 on emission plot plan

3. TANK IDENTIFICATION (NUMBER OR NAME): Diesel Fuel Unloading Station

4. TANK CAPACITY: BARRELS _____ GALLONS _____

5. TANK DIMENSIONS: DIAMETER _____ HEIGHT _____ LENGTH _____ WIDTH _____

6. TANK SHAPE: CYLINDRICAL ☐ SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE _____

7. TANK MATERIALS OF CONSTRUCTION: STEEL ☐ WOOD ☐ OTHER ☐ SPECIFY _____

8. TANK PAINT: CHALKING WHITE ☐ LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

9. TANK CONDITION: GOOD ☐ FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION ☐ ALTERATION ☐

11. TYPE OF TANK: (CHECK ALL APPLICABLE) FIXED ROOF ☐ FLOATING ROOF ☐ PRESSURE ☐ OPEN TOP ☐ INTERNALLY HEATED ☐ INSULATED ☐ UNDERGROUND ☐ OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON ☐ OTHER ☐ DESCRIBE _____

TYPE OF SEAL: SINGLE ☐ DOUBLE ☐ OTHER ☐ DESCRIBE _____

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED ☐ OTHER ☐ DESCRIBE _____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE:

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL:

	NUMBER	PRESSURE SETTING	VACUUM SETTING	DISCHARGING TO: (CHECK) ATMOSPHERE	VAPOR CONTROL	FLARE
COMBINATION						
PRESSURE						
VACUUM						
OPEN						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK: DENSITY: _____ LBS/GAL. (OR) _____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK: MINIMUM TEMPERATURE _____ °F MAXIMUM TEMPERATURE _____ °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).

VAPOR PRESSURE: _____ LBS. REID (OR) _____ LBS. PER SQ. IN. ABSOLUTE AT _____ °F

INITIAL BOILING POINT: _____ °F

FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: _____ °F

18. OPERATIONAL DATA: Submerged Loading

MAXIMUM FILLING RATE: 280 BARRELS PER HOUR (OR) 12,000 GALLONS PER hour

AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) N/A FT

AVERAGE THROUGHPUT: _____ BARRELS PER DAY (OR) N/A GALLONS PER DAY

TANK TURNOVERS PER YEAR: _____

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:

NAME OF SOLVENT: N/A NAME OF MATERIAL DISSOLVED: _____

CONCENTRATION OF MATERIAL DISSOLVED: _____ % BY WEIGHT (OR) _____ % BY VOLUME (OR _____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:

IDENTIFY THE MATERIAL: N/A

PRESSURE AT WHICH MATERIAL IS STORED: _____ LBS. PER SQ. IN. GAGE AT _____ °F

THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM

SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J. Blaine Miller

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.

NAME X J. Blaine Miller

TITLE President, Rio Blanco Oil Shale Company

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off tract property) E-6011 on Emission Plot Plan

3. TANK IDENTIFICATION (NUMBER OR NAME): Gasoline Storage Tank

4. TANK CAPACITY: BARRELS 143 GALLONS 6000

5. TANK DIMENSIONS: DIAMETER 8 HEIGHT 18'9" LENGTH _____ WIDTH _____

6. TANK SHAPE: CYLINDRICAL ☒ SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE _____

7. TANK MATERIALS OF CONSTRUCTION: STEEL ☒ WOOD ☐ OTHER ☐ SPECIFY _____

8. TANK PAINT: CHALKING WHITE ☒ LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

9. TANK CONDITION: GOOD ☒ FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION ☒ ALTERATION ☐

11. TYPE OF TANK: (CHECK ALL APPLICABLE) FIXED ROOF ☒ PRESSURE ☒ INTERNALLY HEATED ☐ UNDERGROUND ☒
FLOATING ROOF ☐ OPEN TOP ☐ INSULATED ☐ OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:
TYPE OF ROOF: DOUBLE DECK ☐ PONTOON ☐ OTHER ☐ DESCRIBE _____
TYPE OF SEAL: SINGLE ☐ DOUBLE ☐ OTHER ☐ DESCRIBE _____
TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED ☐ OTHER ☐ DESCRIBE _____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE:

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL: to follow

	Number	Pressure Setting	Vacuum Setting	Discharging to: (Check) Atmosphere	Vapor Control	Flare
Combination						
Pressure						
Vacuum						
Open						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK: Gasoline DENSITY: _____ LBS/GAL. (OR) _____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK: MINIMUM TEMPERATURE -30 °F MAXIMUM TEMPERATURE 105 °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY).
VAPOR PRESSURE: _____ LBS. REID (OR) 0.5 LBS. PER SQ. IN. ABSOLUTE AT _____ °F
INITIAL BOILING POINT: _____ °F
FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: _____ °F

18. OPERATIONAL DATA: Submerged Loading
MAXIMUM FILLING RATE: 70 BARRELS PER HOUR (OR) 3000 GALLONS PER HOUR
AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) 7'6"
AVERAGE THROUGHPUT: 1,667 BARRELS PER year (OR) 192 GALLONS PER DAY
TANK TURNOVERS PER YEAR: 12

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:
NAME OF SOLVENT: N/A NAME OF MATERIAL DISSOLVED: _____
CONCENTRATION OF MATERIAL DISSOLVED: _____ % BY WEIGHT (OR) _____ % BY VOLUME (OR _____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:
IDENTIFY THE MATERIAL: N/A
PRESSURE AT WHICH MATERIAL IS STORED: _____ LBS. PER SQ. IN. GAGE AT _____ °F

21. THE ABOVE INFORMATION IS SUBMITTED TO DESCRIBE THE USE OF THE TANK FOR WHICH APPLICATION FOR PERMIT IS BEING MADE ON THE ACCOMPANYING FORM
SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J. Blaine Miller

TYPE OR PRINT NAME & OFFICIAL TITLE OF PERSON SIGNING DATA FORM.
NAME X J. Blaine Miller
TITLE President, Rio Blanco Oil Shale Company

STORAGE TANK SUMMARY

(SEE REVERSE SIDE FOR INSTRUCTIONS)

THIS FORM MUST BE FILLED OUT COMPLETELY IN DUPLICATE FOR EACH TANK AND MUST ACCOMPANY THE TRIPLICATE APPLICATION FOR: AUTHORITY TO CONSTRUCT ☐, OR PERMIT TO OPERATE ☐

1. BUSINESS LICENSE NAME OF CORPORATION, COMPANY, INDIVIDUAL OWNER OR GOVERNMENTAL AGENCY UNDER WHICH APPLICATION IS SUBMITTED: RIO BLANCO OIL SHALE COMPANY

2. TANK LOCATION: Tract C-a (RBOSC off-tract property) E-6012 on emission plot plan

3. TANK IDENTIFICATION (NUMBER OR NAME): Waste Oil Storage Tank

4. TANK CAPACITY: BARRELS -238 GALLONS 10000

5. TANK DIMENSIONS: DIAMETER 12' HEIGHT 12' LENGTH _____ WIDTH _____

6. TANK SHAPE: CYLINDRICAL [X] SPHERICAL ☐ OTHER SHAPE ☐ DESCRIBE _____

7. TANK MATERIALS OF CONSTRUCTION: STEEL [X] WOOD ☐ OTHER ☐ SPECIFY _____

8. TANK PAINT: CHALKING WHITE [X] LIGHT GREY OR BLUE ☐ ALUMINUM ☐ DARK COLOR OR NO PAINT ☐

9. TANK CONDITION: GOOD [X] FAIR ☐ POOR ☐

10. TANK STATUS: NEW CONSTRUCTION [X] ALTERATION ☐

11. TYPE OF TANK: (CHECK ALL APPLICABLE) FIXED ROOF ☐ PRESSURE ☐ INTERNALLY HEATED [X] UNDERGROUND ☐
FLOATING ROOF [X] OPEN TOP ☐ INSULATED [X] OTHER ☐

12. IF TANK IS TO HAVE A FLOATING ROOF, SUPPLY THE FOLLOWING INFORMATION:

TYPE OF ROOF: DOUBLE DECK ☐ PONTOON ☐ OTHER ☐ DESCRIBE _____

TYPE OF SEAL: SINGLE ☐ DOUBLE ☐ OTHER ☐ DESCRIBE _____

TYPE OF SHELL CONSTRUCTION: RIVETED ☐ WELDED ☐ OTHER ☐ DESCRIBE _____

13. IF TANK IS TO HAVE ANY OTHER TYPE OF ROOF OR COVER (OR NONE AT ALL), DESCRIBE:

14. VENT VALVE DATA: INDICATE TYPE, NUMBER, SETTINGS AND VAPOR DISPOSAL:

	NUMBER	PRESSURE SETTING	VACUUM SETTING	DISCHARGING TO: (CHECK) ATMOSPHERE	VAPOR CONTROL	FLARE
COMBINATION						
PRESSURE						
VACUUM						
OPEN						

15. NAME ALL LIQUIDS, VAPORS, GASES OR MIXTURES OF SUCH MATERIALS TO BE STORED IN THIS TANK: Waste oil
DENSITY: _____ LBS/GAL. (OR) _____ °A.P.I.

16. TEMPERATURES AT WHICH THE ABOVE LISTED MATERIALS ARE TO BE STORED IN THIS TANK:
MINIMUM TEMPERATURE _____ °F MAXIMUM TEMPERATURE 100 °F

17. IF MATERIAL STORED IS A PETROLEUM PRODUCT OR ANY OTHER TYPE OF ORGANIC MATERIAL, SUPPLY THE FOLLOWING INFORMATION FOR EACH MATERIAL: (ATTACH ADDITIONAL SHEETS, IF NECESSARY). Variable
VAPOR PRESSURE: _____ LBS. REID (OR) _____ LBS. PER SQ. IN. ABSOLUTE AT _____ °F
INITIAL BOILING POINT: _____ °F
FOR HEAVY PETROLEUM PRODUCTS ONLY: FLASH POINT: _____ °F

18. OPERATIONAL DATA:
MAXIMUM FILLING RATE: 43 BARRELS PER HOUR (OR) 1800 GALLONS PER HOUR
AVERAGE OUTAGE: (AVERAGE DISTANCE FROM TOP OF TANK SHELL TO LIQUID SURFACE) 6 FT
AVERAGE THROUGHPUT: 2.1 BARRELS PER DAY (OR) 90 GALLONS PER DAY
TANK TURNOVERS PER YEAR: 3.3

19. IF MATERIAL STORED IS A SOLUTION, SUPPLY THE FOLLOWING INFORMATION:
NAME OF SOLVENT: N/A NAME OF MATERIAL DISSOLVED: _____
CONCENTRATION OF MATERIAL DISSOLVED: _____ % BY WEIGHT (OR) _____ % BY VOLUME (OR _____ LBS./GALLON

20. IF MATERIAL STORED IS A GAS OR A LIQUIFIED GAS WHICH IS NOT A PETROLEUM PRODUCT, SUPPLY THE FOLLOWING INFORMATION:
IDENTIFY THE MATERIAL: N/A
PRESSURE AT WHICH MATERIAL IS STORED: _____ LBS. PER SQ. IN. GAGE AT _____ °F

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SIGNATURE OF RESPONSIBLE MEMBER OF FIRM: → J Blaine Miller

TYPE OR PRINT NAME AND OFFICIAL TITLE OF PERSON SIGNING THIS DATA FORM.

NAME X J. Blaine Miller

TITLE President, Rio Blanco Oil Shale Company

Form 1279–3
(June 1984) BORROWE

TD 887 .04 R56

Rio Blanco Oil
Tract C-a air

DATE LOANED	BORROWER

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